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### COLUMBUS MUNICIPAL LIGHTING PLANT

History of Its Growth—Steam Turbines Furnish Power—Rated Capacity 3300 Horsepower—Six Water Tube Boilers—Switch Board—Other Accessories—Street Lighting System—System of Records

By G. H. GAMPER, Superintendent Department of Lighting

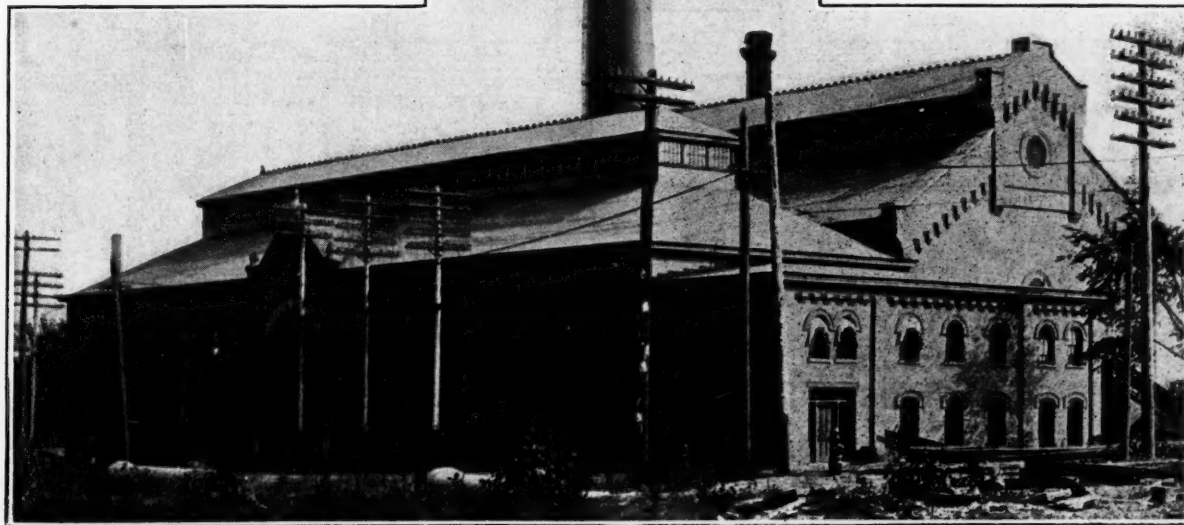
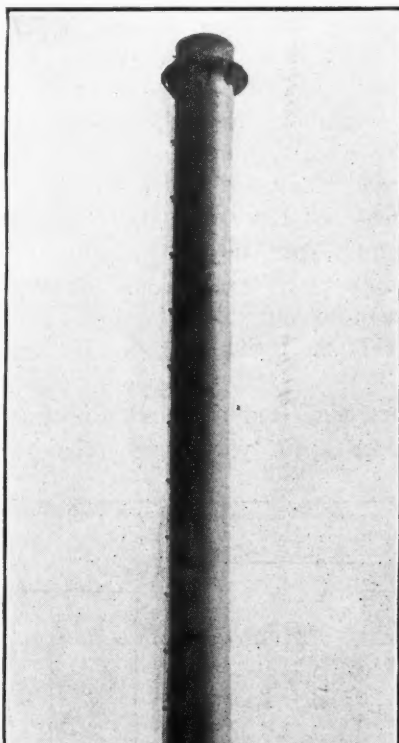
THE erection of an electric lighting plant to cost \$300,000 was authorized by a two-thirds vote of the citizens of Columbus, O., in April, 1896, and on November 22, 1897, Council authorized the issuing of \$68,000 in bonds for this purpose. The plant thus purchased was opened in March, 1899, but was shut down July 5, 1900, for lack of funds to operate it; the Superintendent stating that the city could not operate the plant and furnish light with profit, as the cost had been \$90.22 per lamp per year, moon-light schedule, while the lighting company had offered a contract rate of \$74.50.

On April 29, 1901, Council authorized the issuance of \$110,000 additional bonds and authorized and directed the Director of Public Improvements to erect and equip an electric power plant for lighting the city, utilizing as far as possible the existing plant. The city officials were shortly confronted by injunction suits and other court proceedings to prevent the erection of this plant and the case dragged along until fall, when it

was decided in favor of the city. Council then promptly passed a further ordinance providing for the issuance of the remaining \$122,000 of bonds authorized in 1896.

On October 19, 1901, the old plant was again put into operation, and at the beginning of 1902, 300 open arc lamps were in service. Plans and specifications were prepared and by the end of 1903 the greater part of the present plant had been erected.

The power plant is situated on the east bank of the Olentangy River, on Dublin avenue, and is a handsome structure of light brown hard-pressed brick with sandstone trimmings. It consists of a turbine room 46 feet wide and 156 feet long, and a boiler room 57 feet wide and having the same length; the two being separated by a 24-inch brick partition wall. Each room has an independent slated wooden roof supported by steel trusses, and a monitor roof extends the entire length of each room, fitted with swinging sash on both sides.



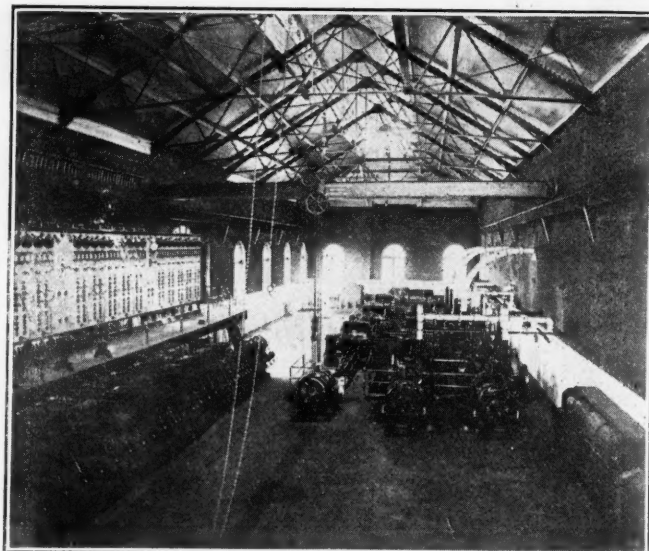
POWER PLANT OF COLUMBUS MUNICIPAL LIGHT DEPARTMENT

## TURBINE ROOM

The floor of the turbine room is of six-inch concrete laid on brick arches sprung between steel I beams, and is finished with small pieces of marble imbedded in the cement and rubbed to a smooth finish. The interior walls have a wainscoting seven feet high, of white enameled glazed brick, the rest of the wall being of hard-pressed, light brown brick. The condenser pits are also lined with white enameled brick. At the end of the building is a two-story wing, 25 feet wide and 46 feet long, the lower floor of which is used for the stock room and machine shop and the second for the office, arc lamp testing room, coal testing laboratory and lavatory. Stairs lead from the main turbine floor to a reinforced concrete gallery which extends the full width of the room, from which gallery are the entrances to the offices.

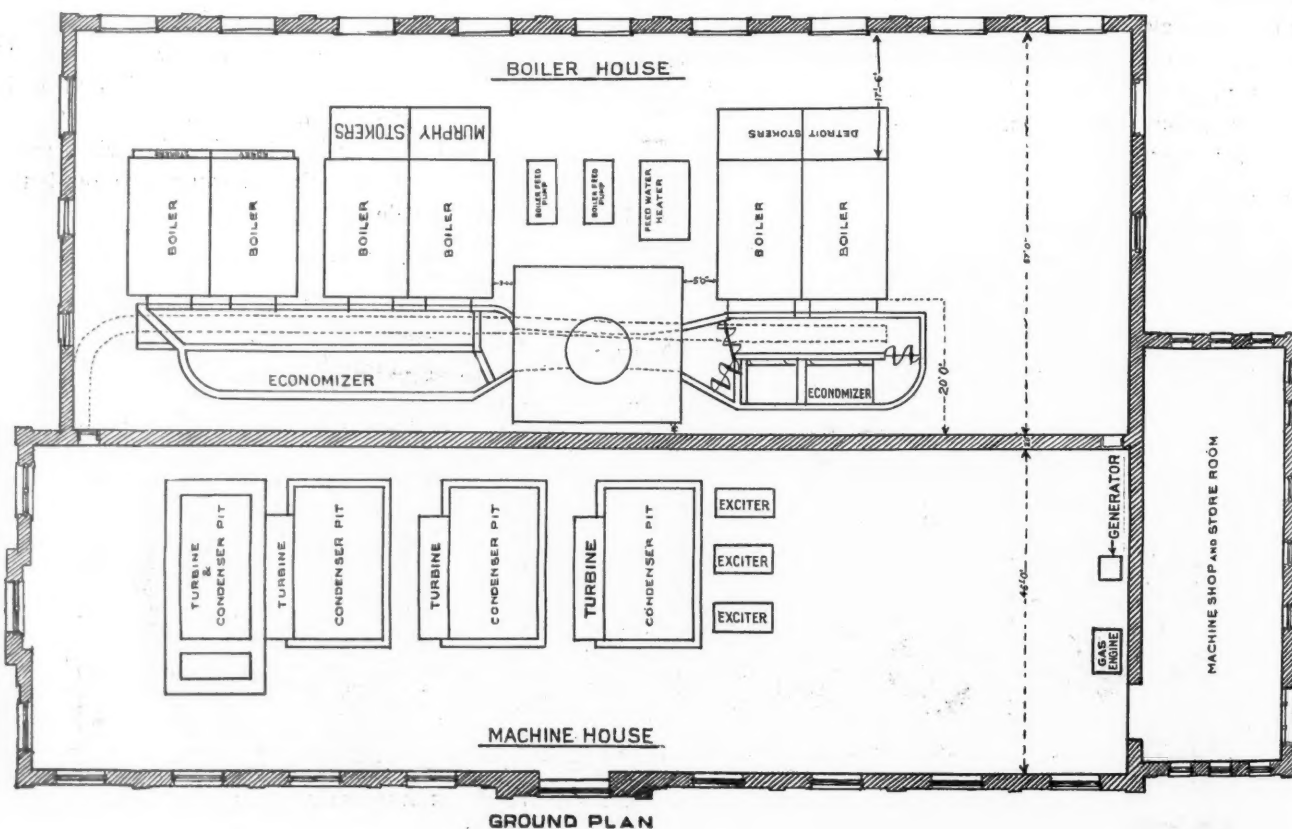
The machinery is arranged on the unit system plan as far as possible. The turbines are of the Parsons multi-expansion type. Three are Westinghouse-Parsons, each of 600 horsepower rated capacity, and one is Allis-Chalmers of 1,500 horsepower rated capacity. Each has an overload capacity of 50 per cent. The Westinghouse turbines run at 3,600 revolutions per minute and the Allis-Chalmers at 1,800. Each turbine is equipped with an independent automatic atmospheric relief valve to protect the turbine in case of loss of vacuum, and an independent oiling system. The Allis-Chalmers turbine is also equipped with a reserve oil pump, steam driven, and an arrangement to shut off the steam automatically which will prevent the turbine from running away.

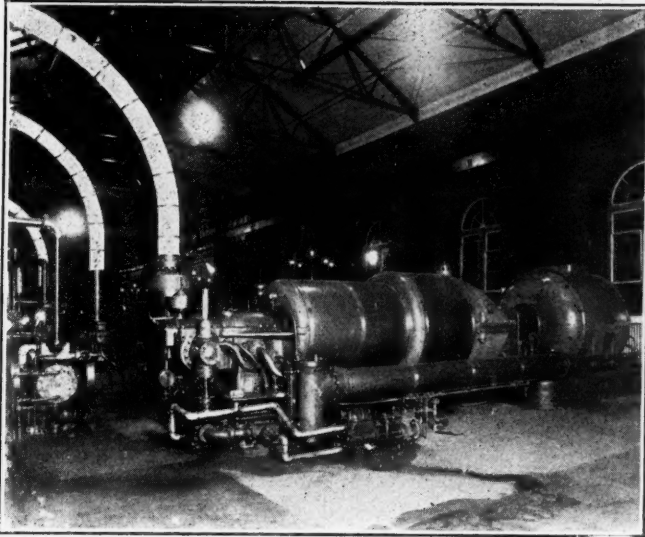
The Westinghouse turbines are direct connected to 400-kw. generators of the Westinghouse open type,



INTERIOR OF TURBINE ROOM

two pole, revolving field; and the Allis-Chalmers is direct connected to a 1,000-kw. generator of the Bullock enclosed type, four pole, revolving field; all delivering two-phase, 60-cycle, 2,200-volt, alternating current. Two 25-kw., 125-volt, direct current Westinghouse generators, and a 50-kw., 125-volt, direct current Bullock generator, furnish the excitation current. These are arranged to operate either in parallel or independent. They also furnish current for the incandescent lighting at the plant. The auxiliaries for the Westinghouse units are located in open pits at the sides of the turbines. These include surface condensers, an air cooler, circulating pump, hot well pump and dry vacuum pump. The four vacuum pumps are so connected up that they can be operated in parallel or independently.





TURBINE RECENTLY INSTALLED

The circulating water for the entire plant is taken from the Olentangy River through a 24-inch cast-iron pipe and is discharged into the river again through another similar pipe. A dam six feet high is constructed between the abutments of a bridge, so as to furnish plenty of water when the river is low. The water passes through a series of screens into a concrete screen house and thence to the suction chamber below the dam. Water is raised from this into the 24-inch suction by means of two 10 x 12 x 12 wet vacu-

um pumps. After the pipe is filled, one pump is kept running to keep the line free from air and prevent the circulating pumps from losing their priming.

A 9½-inch Westinghouse steam air compressor is used for blowing out generators and motors and for any other purposes for which air may be wanted.

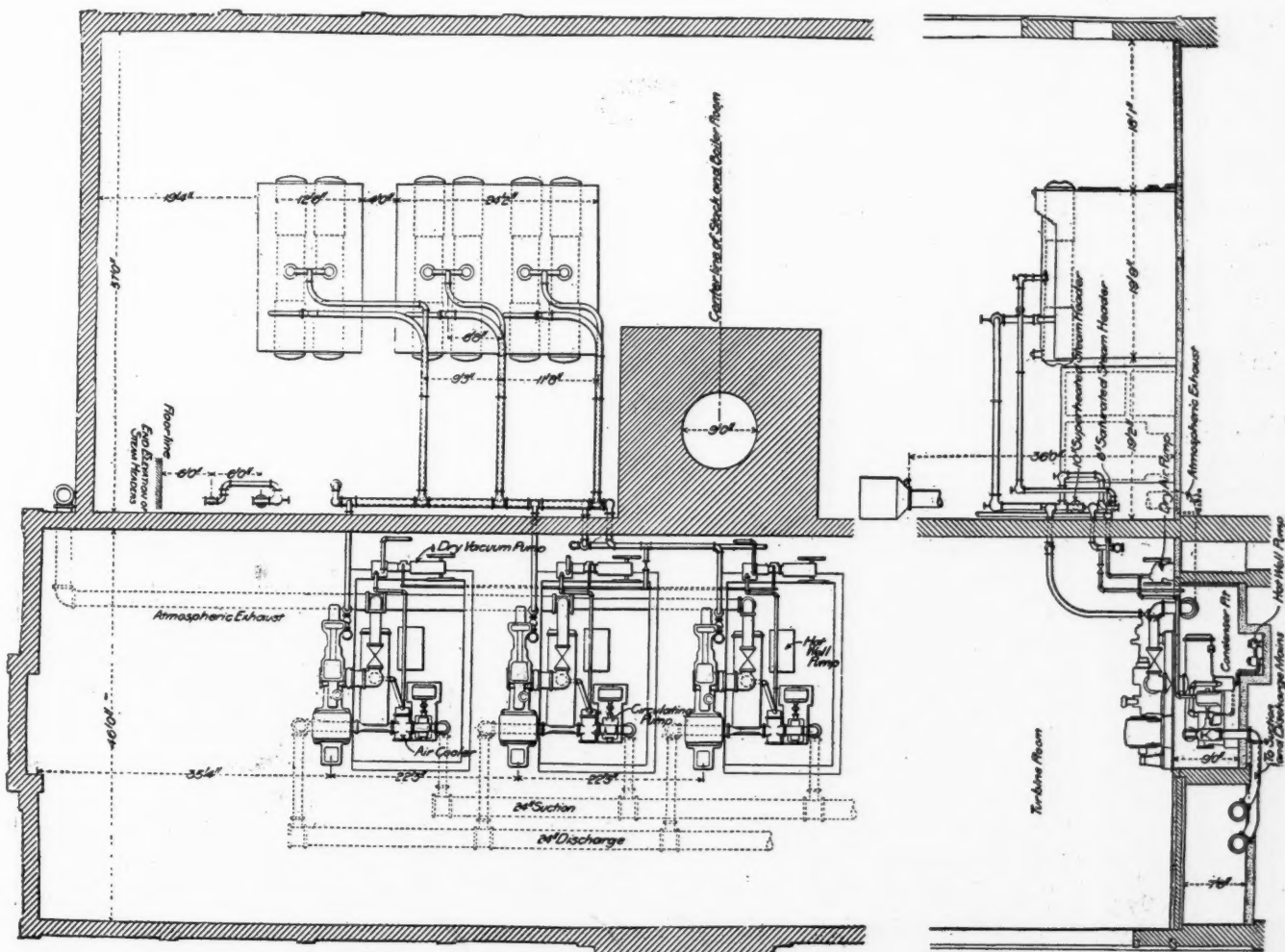
A 7-horsepower Reeves upright gas engine is now being installed to furnish power for an 18-inch lathe, drill press, shaper and emery wheel, and also drives a 6-kw., direct-current generator that furnished current during the day when the plant is not in operation.

A ten-ton Pawling and Harnischfeger hand operated crane spans the turbine room for handling the machinery.

#### BOILER ROOM

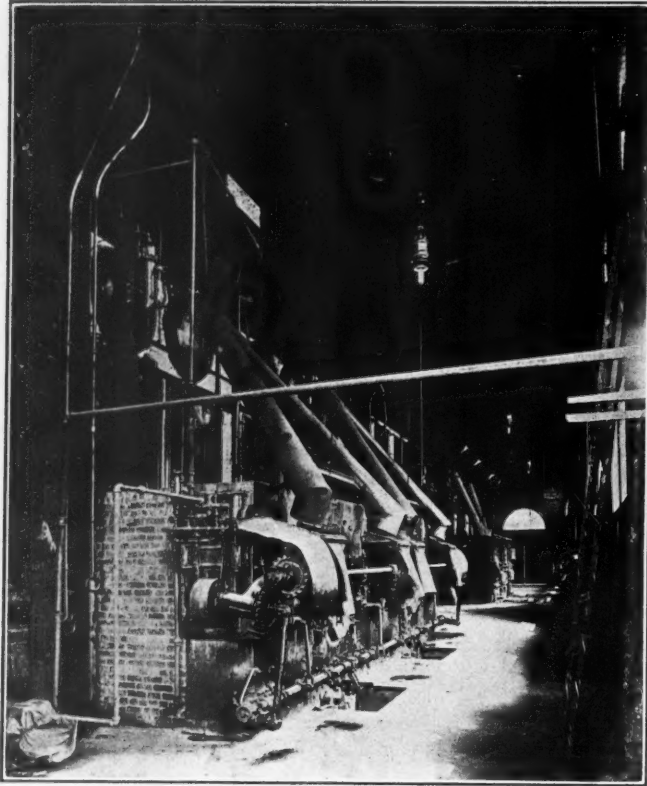
The boiler room equipment consists of three batteries, two boilers each, of Babcock & Wilcox water tube boilers, of 600 horsepower each, equipped with superheaters suspended between the drums and tube in the rear pass, each superheater being of sufficient capacity to superheat the steam to 100° to 140° F. above that due to the working pressure of 150 pounds per square inch. They are arranged with flooding connections which permit their use as additional heating surface.

The boilers are equipped with feed water regulators, and one battery is equipped with Vulcan soot blowers. One battery of two boilers is equipped with Detroit



PIPING—LAY-OUT OF UNITS FIRST INSTALLED. SAME SCHEME IS FOLLOWED IN LAYING OUT ADDITIONAL UNITS.





BOILER ROOM, SHOWING NEW STOKERS AND FURNACES

automatic stokers with screw feed and Dutch oven furnace; another pair is now being equipped with the Murphy automatic stoker and Dutch oven furnace, and the third is equipped with the Roney stokers set under the boiler.

The products of combustion of the two original batteries reach the stack either directly or by passing through a Bromwell-Schmidt-Stacy economizer; those of the new battery, which is located on the opposite side of the stack, pass directly to the stack or are bypassed through an 8-pipe 24-section Sturtevant economizer. The Bromwell-Schmidt-Stacy economizer was never used, as it was too light for the working pressure of 175 or even 150 pounds, and it is now being replaced with the latest type of Sturtevant economizer similar to the other.

The stack is a self-supporting steel chimney 210 feet high, and 9 feet inside diameter, lined with fire brick and located in the center of the boiler room.

The coal is dumped from hopper bottom cars into a 12x12-foot steel hopper under the track, from which it is taken by a 30° incline beaded flight conveyor to a tooth coal crusher. After being crushed it slides through a chute to the elevator boot, where it is raised to the monitor of the boiler room and distributed to the various coal bins by a longitudinal scraper-type conveyor. The coal bins, of which there is one for each battery, and which have a capacity of 300 tons, are supported independent of the boilers and building on heavy built-up steel columns. The hopper, conveyor and crusher were built by the Jeffrey Manufacturing Company, and installed by the power plant force, and were recently put in to displace a screw conveyor which had a capacity of ten tons per hour instead of the forty tons capacity of the present system. The bunkers, ele-

vators and conveyor were installed by the Heyl & Patterson Company.

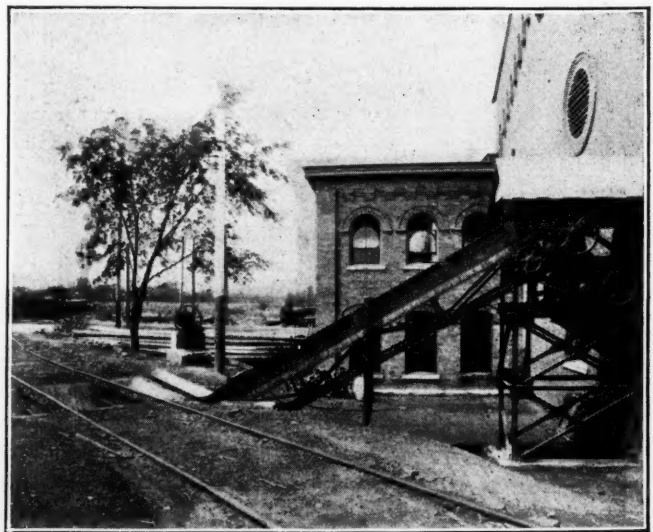
Coal is delivered directly to the stoker hoppers by a special weighing hopper, of which there is one for each boiler holding approximately 1,000 pounds. The discharge is controlled from the floor and the weighing is accomplished by a special weighing box within easy reach of the floor.

The ashes from the Detroit and Murphy stokers fall into steel hoppers, from which they are dumped at will into a tunnel or driveway under the floor, from which they are hauled away by teams. The ashes from the Roney stokers must be shoveled from a pit into the driveway.

Feed water is taken from a 1,200-horsepower Hoppes open feed water heater, into which all condensation discharges. What little water is lost is replaced from a wooden tank supplied from the city mains. The boilers are fed by a duplicate Worthington duplex pump. The feed water is heated to 200° by the exhaust steam of the auxiliaries, and is then raised to 300° or 350° by passing through either economizer or both, or may be pumped directly to the boilers. In each feed water line is a Worthington hot water meter by which the record of the amount of water used by each boiler is known. This can be cut out for calibrating or other purposes without disconnecting any piping. Thermometers are placed in the feed water lines as they leave the pumps and as they enter the boilers; also in the path of the gases as they leave each boiler and before and after leaving the economizers. A draft gauge is connected to each boiler in the combustion chamber.

Artesian well water, raised by a small pump, is used for drinking purposes, circulates through the turbine oil cooler and serves as jacket water to the dry vacuum pumps.

There is a ten-inch header or main pipe for the superheat system, and suspended six feet below this is an 8-inch header for the saturated steam; these being carried by a line of brackets set in the partition wall in the rear of the boilers, and extending the full width of all the batteries. The superheater header is connected to



TRACK HOPPER, CONVEYOR AND CRUSHER  
Capacity, 35 to 40 Tons per Hour.



the superheat steam nozzles by 8-inch pipes with long double sweep bends, Pearson non-return valves are set at the boiler nozzles and Chapman angle gate valves at the header. The saturated header is connected to the boiler nozzles by 5-inch pipes. The two headers are connected at each end by a 5-inch loop, which permits supplying either saturated steam or a mixture of superheat and saturated steam to the turbines. Saturated steam is used for all auxiliaries, the pressure being reduced to 110 pounds by pressure reducing valves.

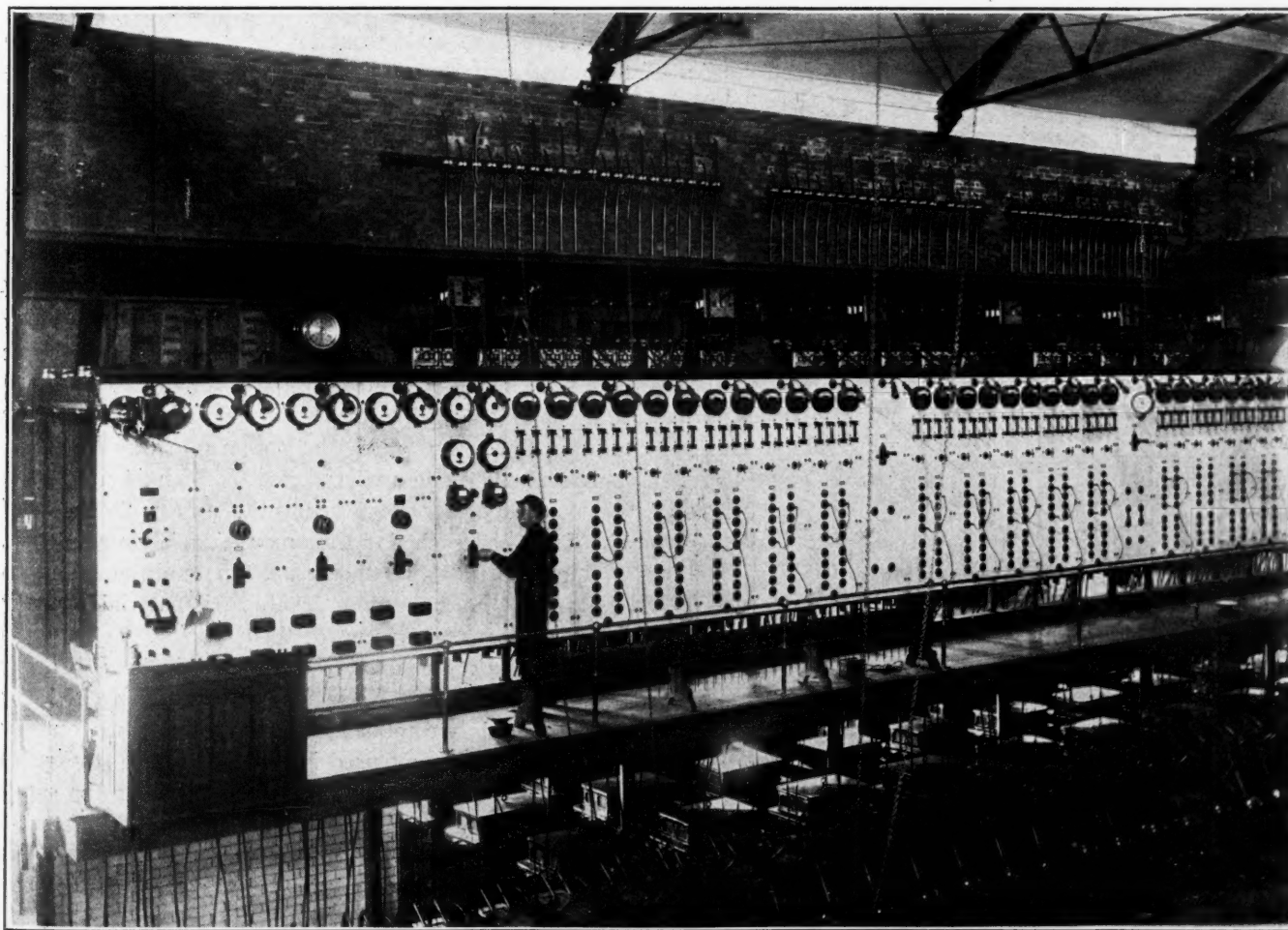
All the high pressure piping, superheat, saturated steam, blow off and feed water lines are made of extra heavy wrought-iron flanged pipe, copper gaskets being used. All steam mains are drained. Traps discharge into the feed water heater. All saturated steam and exhaust pipe is covered with a standard thickness of 85 per cent. magnesia sectional covering. The superheat pipe was originally covered with the same  $1\frac{1}{2}$  inches thick; but the loss was so great that another covering of  $1\frac{1}{4}$ -inch magnesia blocks with  $\frac{1}{2}$ -inch magnesia cement, and covered with canvas, was recently put over the old covering on all the superheat pipe, which reduced this loss over 50 per cent.

On an elevated gallery, extending one-half of the length of the turbine room, is located the switchboard, from which the operator has a full view of the entire generating equipment. This board is made of white marble polished on both sides and containing one meter panel, two sections of six panels each and one of five

panels for lighting service, and two panels on which are located the oil switches for cutting out the different sections, an indicating watt meter and a common volt meter. There is a direct current and ammeter for each exciter; an alternating current ammeter on each phase of each generator; two ammeters on each circuit panel, one for each of the two circuits served; also a common volt meter and common indicating watt meter for measuring the volts and watts used by each circuit; with many other details which tend to make this equipment unusually complete. The panels are six feet from the wall, leaving plenty of room for passage, and making everything accessible.

The lightning arresters are located on the building wall back of the switchboard. The step-up transformers are under the gallery on the turbine room floor, and in front of them are the regulators.

In the normal operation of the plant the generators are run in parallel. By cutting out the field resistance and controlling the voltage by the existing current, so as to have all the generator field of the same strength, there is very little cross-current between the machines. The power for the arc circuits is taken from the 2,000 volt bus bar through the totalizing panel to the primaries of the transformers, which have a ratio of three to one. There are thirty-two circuits of seventy-five lamps each. The switchboard wiring is so arranged that the phases in the generators can be balanced up and reverse transformers can be cut in when necessary.



SWITCHBOARD. NEW GENERATOR AND EXCITER PANEL AT LEFT END. REGULATORS AND TRANSFORMERS BELOW

For lighting the power plant, four arc lamps are suspended from the roof trusses in the turbine room, and three in the boiler room. There is a five-light incandescent fixture on each generator, and a three-light fixture on each exciter, and two light fixtures are placed at each turbine and dry vacuum pump.

The cables connecting the generators to the switch-board are run through the tunnel containing the suction and discharge pipes for the circulating water.

#### STREET LIGHTING

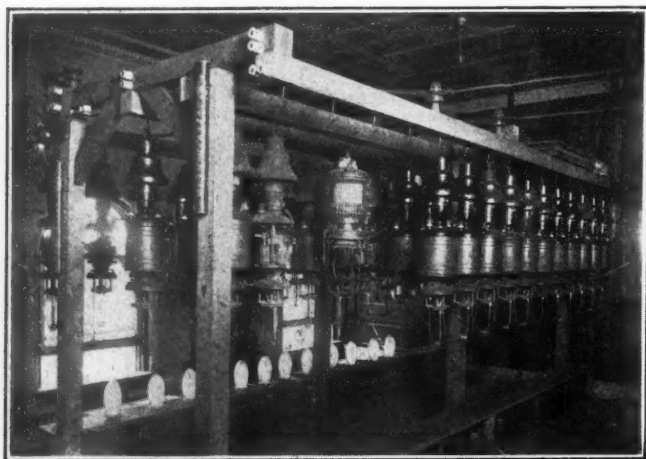
The street lighting is done entirely by arc lights with the exception of High street, the main street of the city,



ARCHES FOR STREET LIGHTS, HIGH STREET

where arches span the street, each containing fifty incandescent lamps. The arc lamps are of the Western Electric and Westinghouse enclosed type, and are suspended over the intersections of the streets by a mast arm made of iron pipe. The wiring is all over head. The trunk lines and loops were originally all run with parallel wire, but this has been changed to parallel trunk lines and single wire loops, with twenty-five lamps to a single loop, and cut out box placed in each loop, so that any single loop can be cut out in case of trouble. We have found that this system of construction not only saves wire in first installation and reduces the line loss about 40 per cent., but there is less trouble and interruption of service and this is more easily located; also fewer poles are necessary.

New lamps are being installed, and by the end of the year we expect to have 2,200 lamps in service. Pro-



LAMP TESTING AND REPAIR ROOM

visions are being made for the further installation of 200 additional lamps the first part of next year.

Wagons with extension ladders are used in trimming the lamps. These wagons are arranged to carry three extra lamps, carbons and globes, and tools for repairing lamps, when this can be done without bringing them to the plant.

#### THE SYSTEM OF RECORDS

It is commonly stated that operating a lighting plant costs a municipality more than it does a corporation. When true, the reasons generally are that there is no adequate system of cost keeping, no organization (due to political changes), the superintendent has little control of the men because he does not appoint them, and for the same reason they may lack in efficiency. The superintendent himself is not always selected for his ability. A system of records, once started, is sometimes discontinued because the superintendent, being not sure of the permanency of his position, may be discouraged by the work involved and the uncertainty of the continuance of the system.

The conditions above referred to existed at Columbus up to this year; but since the first of the year the lighting plant has been divorced from politics and placed on a strictly business basis. A most complete system of record keeping was inaugurated in this plant on March 1 of this year, but it was not until July 1 that the employees had become familiar with it, and the system continued to run smoothly. A general description of the system is given below.

Before any new or repair work is started, the foreman in charge makes out an estimate, this containing the order number of the job, date, location, whom ordered by, and description, as well as the estimated cost of material and labor. This is submitted to the superintendent for approval, thus giving him an opportunity to pass upon its advisability. When approved, it goes to the clerk, who fills out an order blank which contains the same items, together with the estimated date of completion and a space for entering the date of actual completion, together with other columns for recording later the labor and material used, with the dates. This is kept on file in the office.

A foreman's job order is issued in exact duplicate of the above, on which the foreman enters the time, check number and material used, which is used as a check on the storeroom requisitions. On the back of this is placed each day the amount of labor employed, giving each man's number, rate, time and date; and on the front, the amount and value of material used or name of firm and amount of their invoice. On the completion of the job, the foreman sends in his job order entered up complete, from which the amounts of labor and materials are totaled. Any material taken out for this job which is not used is returned to the stockroom and the storekeeper sends in a credit slip for the same, giving the number of the job and the quantity, material, prices and value of what was returned. This is deducted from the cost and the actual cost of the job obtained.



A list of general job orders is issued each month on which are entered small items like packing, gauge glasses, oil, waste and anything that costs under a dollar. These are closed each month and their total cost distributed to the different accounts. If the use of a horse is necessary, his time is charged to the job, and the total cost of the stable for a given month is distributed proportionately to such time.

In making out requisitions for supplies a numbered requisition card is delivered at the storeroom. If the material is not in stock the storekeeper sends to the office a requisition for the same. If the amount is small it is purchased direct; but if large, quotations are asked from the different supply houses, the lowest and best being accepted. A requisition sheet is then issued in triplicate, a white sheet going to the dealer, a pink to the auditor and a yellow being filed in the office. Each sheet contains the requisition number, the job number and the fund from which it is paid; also the name of the firm, material, quantity and price. The yellow office copy also contains the storekeeper's receipt for the goods named and the date the bill was vouchered with the name of the person who checked the same. Thus should information be wanted at any time as to what was furnished for a certain job, reference to the requisition number in the requisition file, as given on the job order card, will secure the information.

In making up the monthly reports everything is taken into account, the service, transmission and generation expenses, etc. The costs of the various items are given for the month and for the corresponding month of the previous year; also the total cost from the first of the year and for the corresponding time of the previous year. This monthly sheet is divided into two general heads, generation service and transmission service. Its general form is shown below.

In determining the cost of fuel per month, the cost of handling the coal and ashes is taken into consideration, and all coal is weighed as used. Administration expenses include all the office force from superintendent to janitor. Loss of taxes is on the same basis as the corporation pays interest. Depreciation is based on the value of the plant. The sinking fund is taken from the sinking fund records.

A boiler room and turbine room log sheet is kept. On the boiler room sheet hourly readings are taken of the superheat temperature, flue gas temperature as it leaves each boiler and before and after leaving the economizer, feed water temperature before entering the boiler and before entering the economizer, and the draft in the combustion chamber of each boiler. The object of reading the temperatures is to keep a check on the firemen, and on the conditions of the boilers and furnaces. At a moment's notice an Orsat gas apparatus can be

### MONTHLY OPERATIONS OF THE MUNICIPAL LIGHTING DEPARTMENT—POWER PLANT

January 1, 190..... to..... 190

GENERATION SERVICE	MONTH		YEAR TO DATE		COST PER 100 KW HOURS	
	This Year	Last Year	This Year	Last Year	This Year	Last Year
<i>Productive:</i>						
S-1—Boiler	Generation Service (Continued)		Generation Service (Concluded)		Total K. W. Hours at Switchboard Cost per K. W. Hour at Switchboard	
S-2—Engine						
TOTAL PRODUCTIVE						
S-3—Non-Productive						
TOTAL GENERATION SERVICE	TOTAL GEN. EXPENSE		TOTAL EXPENSE (Except Fuel)		Increase over Previous Month Decrease over Previous Month	
Per Cent. Non-Productive			3-a—Fuel Used		Tons Fuel Received	
<i>Generation Expense</i>			3-b—Unloading Fuel		Tons Fuel Consumed	
a—Maintenance of Boilers			3-c—Removing Ashes		Cost per Ton	
b— " " Stokers			Total Cost of Fuel		Kind of Coal	
c— " " Boiler Auxiliaries			Total Generation Service & Expense		Number of Employees	
d— " " Pipe Lines					Average Rate of Wages per Hour	
e— " " Engine						
2-a— " " Auxiliaries						
2-b—Lubricants						
TRANSMISSION SERVICE	MONTH		YEAR TO DATE		COST PER LAMP	
	This Year	Last Year	This Year	Last Year	This Year	Last Year
S-4 Productive						
S-5 Non Productive						
TOTAL TRANSMISSION SERVICE	Transmission Service (Continued)		Transmission Service (Concluded)		Monthly Operations of Entire Plant	
Per Cent. Non Productive						
<i>Transmission Expense</i>						
4-a—Maintenance of Switchboard						
4-b— " " Poles	No. of Carbons Secured		Total Gen. and Trans. Service		Total Adm. etc., Expense	
4-c—Moving Poles acc't Street Imp.	No. of Carbons Used		GRAND TOTAL		Total No. of Lamps hours possible	
4-d—Maint'n'ce of elec. circuit overhead	Cost per Thousand Pairs				" " " " actual	
4-e— " " " " under gr'nd	Make of Carbon				Per Cent. of Outages	
4-f— " " " " "	No. of Employees				Cost per Lamp	
4-g— " " " " "	Average Rate of Wages per Hour				Total Cost of Permanent Improvem'ts	
4-h— " " " " "	Total K. W. Hours Generated				Total Cost of Lamp per year, includ-	
4-i— " " " " "	Total K. W. Hours Consumed				ing Permanent Improvements	
4-j— " " " " "	Loss K. W. Hours Lost in Transmiss'n					
4-k— " " " " "	5-a—Administration					
4-l— " " " " "	5-b—Insurance					
4-m— " " " " "	5-c—Loss of Taxes					
TOTAL TRANS. EXPENSE	5-d—Interest on Investment					
<i>Total Trans. Service and Exp.</i>	5-e—Depreciation					
Increase over Previous Month	5-f—Sinking Fund					
Decrease over Previous Month						







MAP OF CITY, SHOWING LOCATION OF LAMPS. POWER PLANT AT A

it required four trimmers, and one man to take care of outages. Three men now trim the lamps and take care of all outages, trimming an average of 140 lamps per day, with the outages in addition, instead of the previous average of 80 lamps per day.

A great deal of trouble has been experienced by the unauthorized use of city poles by wire-using corporations, who also take out city poles and substitute their own. To prevent this in the future a complete record of the poles has been obtained, and a separate card is filed for each pole, giving its number, location, height, wires, etc., and on the back of the same the record of foreign contacts. Any changes are at once noted on these cards.

The system described seems at first glance to be complicated and unnecessary, but properly handled it works smoothly and effects savings many times its cost. From intelligent use of the boiler room log sheets a saving of fuel of over 50 per cent. has been secured, the fuel consumption per k. w. having been reduced from an average of 6.5 pounds to 3.1 pounds, and the better service is obtained with less labor. By careful study and comparison of the monthly reports the cost of operating the plant can be reduced to a minimum.

The cash cost per lamp from the first of July to the

end of the year will approximate \$13.10, judging from the records to date. This includes the new improvements. Half the cost of these should be charged to plant account, and the other half to operation, as they displaced old machinery. This would bring the actual cash outlay per lamp to \$10.26 for the past six months, or an approximate gross cost of \$49 per lamp per year. This will be reduced considerably next year, as a great deal of the expenses of this year will not be necessary and the improvements will make a much greater saving. There will also be a greater number of lamps in service, with very little additional expense connected with the operation and maintenance. The number of hours per year the lamps burn is approximately 3,850.

#### NEW MANTLES FOR GAS LIGHTS

WELSBACH mantles for gas lights are ordinarily prepared by saturating mantles composed of woolen or ramie fiber with a solution of rare earths. Experiments in the substitution of silk, hemp or jute have proved unsuccessful, and artificial fibers become insufficiently saturated.

According to the *Moniteur Scientifique* an artificial fiber has now been found which in all respects is equal to wool or ramie, namely, artificial silk, which is produced by dissolving cellulose in an ammoniacal copper solution. Only the nitrate of thorium does not answer well as a saturant. While artificial silk becomes impregnated with a solution of that salt, the oxide of thorium formed through incineration scales off and nothing but a bit of powder remains. Therefore instead of nitrate of thorium, hydroxide of thorium must be used, which after incineration leaves a perfect, solid skeleton of hard little crystals.

As, however, hydroxide of thorium is of a gelatinous consistency, the mantle of artificial silk cannot be impregnated with it, and therefore it is first saturated with nitrate of thorium, and, through the action of ammonia, hydroxide is formed upon the fiber. One of the greatest advantages of this new mantle is that it is not hydroscopic and is of greater durability.

Experiments have demonstrated that even two to three thousand shocks do not injure it, while the best mantles prepared by the old methods did not survive more than 90 to 100 shocks.

#### OWNERSHIP OF SERVICE PIPES

It appeared from the table in our September 23 issue that in the thirty cities included therein the property owners paid for the water works services in all but four cases, which were municipal plants. It was reported of only one of the private plants that the service was considered to belong to the company. In Akron, O., suit has been brought to determine the right of the company to control the curb box and turn the water off there should they desire. The Court of Common Pleas recently decided that the water company has such right, and can exercise absolute control over the curb box even when the property owner has paid for this box as well as for the service and tapping of the main. The case has been appealed to the Circuit Court.

#### Filing Card Describing Pole

Old Pole No. 718 N. W.  
 Location.....2nd E of Delaware on Collins.  
 Height.....40 ft.  
 X-Arms.....1-2 Pin Gain  
 Mast-Arms.....  
 Wires.....2  
 Guys.....1 1/2" 125' E. to pole No. 719  
 Painted.....Yes  
 Condition.....  
 Value.....

#### REVERSE SIDE

#### FOREIGN CONTACTS

X-Arms.....1-10 Pin Gain, 3  
 Wires.....8 Citizen Tel. Co.  
 Guys.....  
 Remarks.....

## RECENT WORK IN NEW ORLEANS

### Sewerage and Water Works Construction This Year—Work Done by Board by Day Labor—Water and Sewer Connections Compulsory

THE seventeenth semi-annual report of the New Orleans (La.) Sewerage and Water Board for the first six months of this year shows most satisfactory progress being made toward the early completion of the system. Of the sewerage system 281.75 miles have been constructed, with 3,885 manholes and 1,073 flush tanks. There still remains to be constructed about 25 miles of sewers, mostly laterals, in order to completely serve the built-up area of the city. Some connections have already been made to the sewers, but these are scattering, and no flush tanks are yet in service. In spite of these unfavorable conditions, however, stoppages or causes of complaint have been very few during the two years since connections were first permitted.

Two steam-driven and one electric-driven pumping stations are now discharging sewage through force mains into the Mississippi river, and six intermediate-lift electric-driven stations are lifting sewage from low level to high level sewers.

No sewers have been constructed by contract this year, but all this work has been done directly by the Sewerage and Water Board, and by July 1st they had five gangs employed under the immediate supervision of Mr. J. G. Lee. The work done has been mostly on sub-mains or large pipe sewers, together with a number of lengths of laterals extended into the areas where a desire has been expressed for early sewerage connections. These lines up to July 1st aggregated 6.55 miles of sewers, 103 manholes, and 6 flush tanks. At the prices bid by the various contractors last year, this work would have cost the Sewerage and Water Board \$159,077.31. The actual outlay for the work, including tools, equipment and several teams of mules and wagons, etc. (which are assets for future work) was \$77,797.32. All of the conditions for the prosecution of the work were good, the season being unusually dry and the ground water thus reduced to a minimum, and little very difficult work was encountered; the only serious difficulty being the numerous delays in delivery of material, especially sewer pipe. This retarded the work seriously and thereby increased its cost. The showing made, however, is so good, the cost being less than 50 per cent. of the prices bid by the contractors, that there seems to be no doubt but that the saving of 30 per cent., which it was estimated could be made by rejecting all bids and doing the work by force account, can be made in the entire work yet remaining to be done. Experience to date indicates also that at least as good results in construction and much less friction with the public and with other city departments result from construction without letting by contract.

In the water works distribution system 350 miles of new water mains have been laid and 3,397 fire hydrants set. Three of the four 20-million-gallon high duty

pumps have been completed and the six 400-horsepower boilers are ready for operation, one or more of them being already in use. It is expected that by January next connections can be made with the new water works system. The General Assembly has passed an act authorizing the Board to "Require the introduction of water into all inhabited premises in the city of New Orleans, and to abolish or regulate the use of cisterns, tanks, wells and other water receptacles; to make the water rates established by said Board, and the sums expended in enforcing compliance with its regulations, a lien upon premises in which water supplied by said Board is used, or on which such expenditures are made, and fixing the rank of such liens."

The drainage system has been working satisfactorily, and the absence of storms for some months has permitted a draining out of the ground, the pumping having been kept up continuously for this purpose. Considerable work has been done upon the wood-lined canals, and their condition is such that the Board strongly advises the immediate lining of them with masonry, stating that unless it be done in the early future it will be a very costly matter to maintain them. These canals were lined with wood in 1899-1900 and have served their purpose admirably, and their decaying at this time is no reflection upon either the engineering or the economy of their construction.

In operating the drainage pumps, fuel oil has been used costing \$1.099 per barrel delivered. Since the evaporation is ordinarily 15 pounds of water per pound of oil, one pound of oil is equal to two pounds of coal burned under average conditions. The cost of oil, therefore, is equivalent to coal at \$3.40 per ton; and considering the difference in handling the two kinds of fuel, oil is no doubt cheaper on the whole than is coal for this service.

### MOVING PICTURE SHOW REGULATIONS

NORFOLK, Va., has recently adopted regulations calculated to lessen the danger of fire in moving-picture shows. This ordinance appears to be quite complete and has already brought forth considerable favorable comment. The ordinance is as follows:

Whenever moving-picture machines are operated in any building or tent within the city limits, they shall be so located as not to obstruct the exits, aisles or passages thereto, and shall be placed in a metal chamber of galvanized iron not less than No. 24 gauge, said chamber not to be smaller than six feet square by five and one-half feet high, inside measurement. There shall be an inner and outer wall with a two-inch air space between, for sides and top, all to be riveted to a substantial iron framework. There must be a vent pipe not less than twelve inches in diameter run from metal chamber to a point outside building. Main door must be hung by stout coiled spring hinges and swing outward; openings for lens and operator must not exceed ten inches by eight inches each, and have metal drop shutters running in metal grooves, shutters to be held open by light cotton strings passing across inner ceiling of booth, through side of booth to outside. All wiring in booth to be in conduits; wiring for picture machine to be separate from lighting system; all exits to have large signs and red lanterns, burning sperm oil; not less than two five-gallon chemical extinguishers to be located near booth. All machines to be in charge of competent men who shall receive a certificate from the Board of Control, said certificate to be good for only one year and revocable for cause.



## COST OF GAS AND NAPHTHA LIGHTING

Discussion of Massachusetts Statistics—Wide Variations in Cost and Price—Juggling with Expense Accounts—Cost of Naphtha Lamps and Maintenance

BY ALTON D. ADAMS

GAS sells for more than three and one-half times the net cost of the labor and materials required for its manufacture, in some places. In others the price of gas is as low as two and one-half times the net cost of the labor and materials consumed to make it. Sometimes a high ratio of the price of gas to its bare cost of manufacture is made necessary by the nature of the plant and the conditions of distribution. In other cases, a part of the difference between the gas rate and the material and labor cost represents the power of monopoly to exact an unreasonable price.

It is instructive to deduct the net expense for the materials and labor of manufacture from the total cost of gas, apart from taxes, leaving all other expenses grouped together. Among these other expenses are those for repairs, salaries, collections and office work.

Such a division of expenses is convenient because the net cost of the materials and labor employed in the production of gas at the plant is largely fixed by competition and market prices, and represents actual cash outlay. On the other hand, the amounts charged in the books as repairs and depreciation of plant, the amounts paid to the officers as salaries, and the amounts expended in needless competition, for example, may be fixed arbitrarily by those in control of the corporation.

The comparison shows a fair degree of uniformity in the net expense for the materials and labor of manufacture, in plants of like sort, size and situation, while the sum of the other expenses shows a wide fluctuation.

Facts like these are brought out with striking clearness by the table here presented, showing the price per 1,000 feet, the millions of feet sold, the average candle power, the total net cost (less taxes) per 1,000 feet sold, the net cost of materials and labor at the works for the manufacture of gas, and the sum of all other expenses except taxes, for thirteen gas companies in the same State, during a year of operation. All of the figures relate to the same year, except that the year for the companies which sold 11 and 16 million feet of gas respectively follows the year for the other companies. The names of the companies are omitted, so as to allow greater freedom in the discussion of the figures.

It will be noted that these thirteen companies represent a range in annual sales from eleven million to 468 million feet of gas, and that the highest net price per 1,000 feet runs from ninety cents to \$2, though the decrease in price does not follow regularly the increase of output. Thus the company that sold 11 million feet got 40 cents less per thousand than the company that sold 16 million feet, and of two companies

that sold 45 million feet each, the one got 25 cents per thousand more than the other, and the candle powers warranted no such difference.

The total net cost less taxes per 1,000 feet shows as wide a variation as the price, for companies that follow each other in the volume of annual sales; as is illustrated by the excess of 39 cents in cost for the company that sold 16 million feet over the one that sold 11 million feet, and the excess of 35 cents in cost for one of the two companies which sold 49 million feet each over the other one.

In the net cost of materials and labor required at the works for the manufacture of gas there is, in general, a gradual decline with the increase of output, the most notable exception being the two companies that sold 170 million and 290 million feet respectively.

The sum of other expenses except taxes shows the greatest variation in the table, being more than 47 cents greater per thousand feet for the company that sold 16 million feet than for the company that sold 11 million feet, and being 42 cents greater for one of the two companies that sold 49 million feet each than for the other.

Prices and Costs of Gas in Cents Per 1,000 Feet Sold

Highest net price per 1,000 feet gas.....	Million feet sold in the year .....	Candle power of gas....	Total net cost, less taxes, per 1,000 feet sold.....	Net cost of materials and works labor.....	All other expenses except taxes .....	Taxes .....
160	11	19.4	84.55	66.89	17.66	3.40
200	16	20.9	123.51	59.37	64.14	7.89
150	23	17.0	77.97	54.14	23.83	7.77
140	30	17.7	89.73	47.39	42.34	5.25
120	49	17.4	67.94	41.02	26.92	9.91
145	49	17.8	103.68	34.48	69.20	7.27
110	76	16.4	68.52	39.75	28.77	6.40
120	120	18.1	65.04	33.70	31.34	4.22
100	170	20.5	64.66	46.02	18.64	3.93
100	290	18.3	65.36	40.25	25.11	6.66
90	371	20.7	51.80	25.85	25.95	6.46
90	410	18.1	46.75	22.84	23.91	2.61
90	468	18.1	61.28	30.76	30.52	7.17

Various causes produce the wide variations found in the expenses, other than taxes and the net materials and labor of manufacture, of companies having similar outputs.

If a gas company finds that its excess of earnings over true operating expenses is more than it is expedient to pay out as dividends, lest the public take notice and move for lower rates, the company is apt to invest this excess in better and larger plant and charge it in part to repairs, knowing that the value of the stock will thus be increased, and that a future sale of this stock will yield the dividends that cannot be safely taken in a more direct way. This policy of investing surplus earnings above generous dividends in new plant was followed during a number of years by a certain gas company in Massachusetts, and then its entire capital stock of \$75,000 par value was sold for \$500,000. Another gas company, in the same State, charged 24.18 cents for repairs and depreciation per 1,000 feet of gas

sold during a period of twenty years, and in that time an entirely new manufacturing plant of double the original capacity was built, the number of meters and the holder capacity were more than doubled, and the length of mains increased 170 per cent, while the capital stock and notes of the company increased only 35 per cent. and there were no bonds.

Several years ago the manager of a large gas company stated under oath that out of his total charges for repairs, in a certain year, nearly \$27,000 was in fact spent for extensions, and this amount represented more than 18 cents per 1,000 feet of gas sold.

In another case a gas manager let out the following interesting testimony:

"We have spent \$15,000 from earnings on mains, and this was largely for extensions. We did not charge it to construction."

Obviously, most of this \$15,000 went to swell the repair account.

When two or more gas companies come under the same control, as is growing more common with the increase of holding corporations and the transmission of gas at high pressure, and one company has larger net earnings than can be judiciously paid out as dividends, it is easy to increase the expenses of the more prosperous company for the benefit of the others, by making this company buy gas or materials, or rent pipes or plant at excessive rates. A case of this sort came up in Massachusetts some years ago, and it appeared that the more prosperous of two companies that were under a common control was paying to the other company one dollar per thousand feet for gas that the buying company had ample plant to make at a cost of not over 55 cents per thousand feet, and that for the use of pipes, that had cost not over \$140,000, to convey this gas, the prosperous company was paying \$100,000 annually.

Sometimes the persons that control a majority of the stock of a gas company find it more desirable to pay themselves high salaries as its officers than to pay dividends, and so the expense account is run up, while the minority stockholder and the consumer are met with the statement that the company barely makes expenses.

Then again, the persons in control of a gas company may contract with some of their other corporations to erect its plant at ruinously high figures, so that all earnings above expenses will be required for interest on the resulting debt, no matter how high the rates. Such a contract was made by a Massachusetts gas company when it agreed to pay \$450,000 in cash and to give an interest bearing obligation in the sum of \$4,500,000 for the construction of a gas plant that commissioners of the Supreme Judicial Court subsequently found to be worth only \$2,000,000. This was a little too much for the public to stand, and the Legislature revoked the charter of the company, contingent upon the surrender and cancellation of the \$4,500,000 obligation. A number of the above methods of increasing expense accounts are illustrated by the gas companies whose operations are shown in the table.

In the case of the company that reported other expenses, besides taxes and the net materials and labor of manufacture, at 64.14 cents per thousand feet of gas sold, on sales of 16 million feet, while these other expenses were only 17.66 cents for the company having the next smaller output, and 23.83 cents for the company having the next larger output, the facts were thus:

Of the 64.14 cents for other expenses, one-half, or 32 cents, was for salaries alone, and 48.72 cents was required to cover salaries and office expenses. In two years, the total sum expended for salaries and office expenses had increased 164 per cent., while the sales of gas rose 63 per cent. The officers of this corporation were in control of its stock, and they managed it in common with a number of other gas companies, from their office in a distant city. The company that sold 23 million feet had home management that cost only 12.15 cents for salaries and office expenses per 1,000 feet sold.

In the case of the company that sold 49 million feet and charged 69.20 cents per thousand feet for the items under the head of other expenses in the table, the charge for repairs of plant alone was 22.63 cents, and the charge for salaries and office expenses 20.21 cents per thousand feet sold. As a contrast to these figures, the other company that sold 49 million feet of gas, during the year, charged only 11.33 cents per thousand feet sold to repairs, and 14.18 cents to salaries and office expenses.

Coming to the largest company on the list, that sold 468 million feet of gas during the year, its charges under the head of other expenses amounted to 30.52 cents per thousand feet sold, or more than the like charges of any company that sold above 120 million feet.

Out of this 30.52 cents, under the head of other expenses, 18.59 cents was charged to repairs, though the company that sold 371 million feet charged only 12.10 cents, and the company that sold 170 million feet charged only 8.97 cents as the cost of this item, per thousand feet sold.

Besides the increased value of its plant, due to large expenditures under the head of repairs, the company that sold 468 million feet has accumulated a surplus of 32 per cent. above the par value of its stock plus stock premiums and notes, there being no bonds, and whenever a gas rate is fixed for this company that it cares to contest, it is a fair guess that the United States Supreme Court will allow a fair return on the surplus thus exacted from consumers.

#### COST OF NAPHTHA STREET LIGHTING

Single mantle naphtha street lamps are often installed and operated for cities at a rental of about \$30 each per year, for all-night service, or about \$25 each for lighting up to midnight. These rates are for operation every night in the year.

Sometimes the complete mantle lamps have been rented to the city at a rate of \$11 each per year, the contractor supplying mantles and repair parts for the lamps, and the city supplying the naphtha and doing



all the work of repairing and caring for the lamps. But in one case, at least, a large company that contracts for street lighting with naphtha mantle lamps has refused to renew such a contract for the rental of more than one thousand such lamps, at \$11 each per year.

About one-third of the total number of lamps, in the case just named, were operated about 4,000 hours per year, and the other two-thirds burned less than one-half this number of hours; but the yearly rental of \$11 per lamp applied to all alike.

Data in hand for two cities of New England show 3,235 mantle naphtha street lamps in use on a rental basis, and a single company in the business of renting and operating such lamps claims to serve 150 cities and towns in the United States. Besides the cities that contract for street lighting with naphtha lamps, a number own such lamps, and employ the men to care for them.

The field of the naphtha street lamp is that part of the streets not covered by gas pipes, and this must continue to be large. Like gas lamps, the naphtha lamps must be lighted by an attendant daily, but unlike gas lamps, no attendant is required to turn out the lamp in the morning, if the charge of naphtha is just sufficient to burn during one night. Each lamp must be visited when its naphtha tank is filled, however, so that it gets two visits per day in any event. In addition to lighting the lamp and filling the naphtha tank, the burners must be cleaned from time to time, repairs made, and each mantle replaced after it has been in use for 300 to 400 hours of burning.

Where naphtha lamps are supplied on a rental basis, the contractor usually owns the complete lamps, keeps them in repair, supplies the naphtha for their operation, and does the work of lighting. Sometimes the naphtha is supplied by the city, and the contractor takes this naphtha and does all the work of lighting and caring for the lamps. In such a case, the usual charge per year for the use and care of the lamp is reduced by only about the cost of the naphtha.

When a city undertakes to do its own naphtha street lighting, it must make a moderate investment in posts and lamps, should provide a room and a few tools for the repair of burners, and erect a tank for the naphtha. This tank should be located on land adjoining a railroad, and at a lower elevation than the tracks, so that the naphtha will flow by gravity from tank cars into the storage tank. In capacity the storage tank should be a number of times greater than the daily supply of naphtha required, depending on the regularity with which shipments can be procured with certainty.

Single mantle street lamps, as ordinarily operated, consume about 0.02 gallon of naphtha each per hour, so that during a year of 4,000 hours burning, 80 gallons of naphtha is required for each lamp, and this would be the case in all-night and every night lighting. At ten cents per gallon the cost of naphtha is thus \$8 per lamp per year of 4,000 hours. If each lamp burns only 2,500 hours yearly, corresponding to operation every night up to midnight, approximately, the required

naphtha amounts to fifty gallons per lamp, costing \$5 per lamp per year.

For the labor of lighting, extinguishing and repairing these lamps, and of filling their naphtha tanks, plus the cost of tools and small supplies for cleaning, \$7 per lamp per year is sufficient. Mantles and other repair parts for each lamp, plus interest and depreciation charges, are all covered by \$6 per all-night lamp, making the total cost of each of these lamps \$21 for 4,000 hours of service yearly.

For the lamp burning 2,500 hours per year, the cost of mantles and other repair parts, plus charges for depreciation and interest, is covered by \$5, so that the total cost of maintaining and operating this lamp is \$17 yearly.

Each lamp burning 4,000 hours at a rental of \$30 thus yields the contractor a profit of \$9, and each lamp burning 2,500 hours, at a rental of \$25, yields a profit of \$8 yearly, when naphtha costs 10 cents per gallon. This profit is in addition to interest on the investment in lamps, which was provided for in above estimate of cost.

Deducting the cost per lamp of repairs, depreciation and interest, amounting to \$6 annually for 4,000 hours of burning and to \$5 for 2,500 hours of burning, from the \$11 charged for the rental per lamp and the parts for its repair, leaves a profit of \$5 and \$6, respectively, per lamp per year. It is thus evident enough why the contractor refused to renew the rental of lamps at \$11 each, preferring the larger profit obtained by operating the lamps.

As good mantle naphtha lamps can be bought in the open market by any city, and the care of such lamps can be quickly learned by a fair mechanic, there seems to be no good reason why cities and towns should continue to pay excessive rates for the rental and operation of such lamps.

Single cities are using as many as 2,000 of these naphtha mantle lamps, and their total number the country over probably runs into several hundred thousand. An unnecessary expense, in the form of contractor's profit, amounting to \$8 or \$9, more or less, on each lamp, represents a burden of more than \$1,000,000 annually on taxpayers.

#### SIDEWALK PAVING BY CITY BY CONTRACT

PENSACOLA, Fla., seems to have the right idea with reference to sidewalk construction. Mayor Goodman, in a recent message to Council, suggested, what we have advocated several times in these columns, that the city build the sidewalks and collect the cost from the property owners. It is planned to receive bids for ten miles of walks, and it seems probable that on such a large contract low bids will be received, a competent contractor be selected and proper engineering supervision can be given the construction without excessive cost. Property owners will therefore secure good work at low cost, and the city, as a whole, will benefit by a uniformity in the appearance and nature of the work which should add greatly to the appearance of the street. Repairs of walks also are to be performed by the city in the same way. We believe this is the right idea.



## STREET LIGHTING IN CHICAGO

### Cost of Arc Lights per Year—Total Candle Power of Street Lights—Gas and Gasoline Lamps—Light Standards, New and Old

THE annual report for the year 1907 of the Department of Electricity of the city of Chicago contains some interesting information.

There were on December 31, 7,647 arc lights, which had been operated by the city during the year at a cost of \$52.93 each. This does not include interest, depreciation, lost taxes, water rents, rental of poles owned by other companies, office rentals, etc. It does include all superintendence and office expenses, as well as money paid out directly. The city also rented current for some lamps at a cost of \$82.30 per lamp. Rented lamps and current cost \$90 per lamp per year. The costs per arc light per year on the above basis for the past eleven years for the lamps owned by the city were as follows:

1897.....	\$90.65	1903.....	\$54.50
1898.....	68.52	1904.....	55.16
1899.....	55.93	1905.....	52.63
1900.....	60.98	1906.....	52.39
1901.....	57.48	1907.....	52.93
1902.....	53.51		

Some of the power used is obtained from the Sanitary District of Chicago at \$15 per electrical horsepower per year.

The following table gives the estimated c. p. of all kinds of light used since 1895 together with the total cost:

Year.	C. P.	Cost.
1895.....	3,964,000	\$1,098,220
1896.....	4,326,800	1,069,621
1897.....	4,628,400	1,056,713
1898.....	5,093,000	934,917
1899.....	7,359,600	912,589
1900.....	9,513,400	919,163
*1901.....	10,808,600	762,357
1902.....	11,600,000	936,179
1903.....	12,269,000	917,212
1904.....	12,858,000	936,482
1905.....	14,352,434	960,048
†1906.....	16,184,080	957,325
1907.....	18,233,000	1,031,542

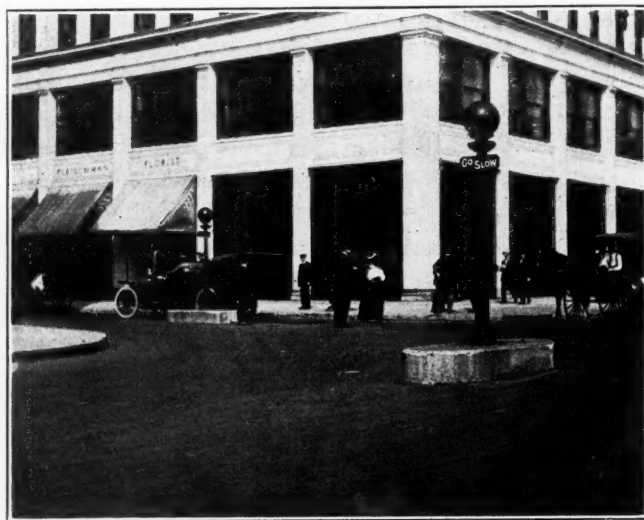
All mantle lights are provided with a pilot light, which burns continuously and consumes about two feet of gas per day. The use of the pilot lamp reduces greatly the number of breakages of mantles by careless lighters.

On streets where there are no gas mains there are used 7,025 gasolene lamps, supplied by the American Development Co. at \$2.20 per month. The company owns and maintains these lamps.

Besides the lighting done with arc lamps a great many of the streets are lighted with gas lamps, of which there were 22,625 on December 31, 1907. Of these 12,102 were mantle lamps and 10,523 flat flame lamps. The flat flame lamps are rated as 18 to 20 c. p. and consume  $3\frac{1}{2}$  feet of gas per hour. The mantle lamps are rated as 60 c. p. and consume 3 feet per hour. Gas is bought from private corporations in the city at 85 cents per M. A Bristol recording pressure gauge, located in the office of the Superintendent of Gas Lighting, records the pressures maintained by the gas company.

\*Free gas received for six months, otherwise the cost would have been about \$942,357. †In Feb., 1906, the price of gas was reduced from \$1.00 to 85c per M.

The city owns all the posts and heads for the gas lights and maintains and keeps them in repair. It pays one cent per lamp per day for lighting and extinguishing the lamps. A folder is furnished the man telling the time set for turning on and off the gas each day of the year, and one hour is allowed for doing this in any one section. The time of lighting the lamps varies from 4.30 P. M. on December 1st to 7.39 on July 1st, and the time of extinguishing varies from 6 A. M. on December 20th to 3 A. M. on June 15.



GUARD STANDS AND LIGHTS

### STREET LIGHTS

In several places where automobile traffic is heavy, isles of safety or guard stands have been established to prevent the automobiles from causing accidents by cutting too close to corners. Light standards are placed in these, each carrying a red globe containing three 30-c. p. incandescent lamps.



PULLMAN BUILDING



LIGHTING CLUSTERS  
Along Michigan Avenue

Among the ornamental standards and lamps used in the city, two in front of the Pullman building show the influence of the crafts and arts ideas. Each section carries one 50-c. p. incandescent lamp. On Michigan avenue, near the Auditorium Hotel, are placed standards at 60-foot intervals, carrying clusters of six small

globes and one large one, each of the former containing three 16-c. p. lamps, and the large one five 16-c. p.

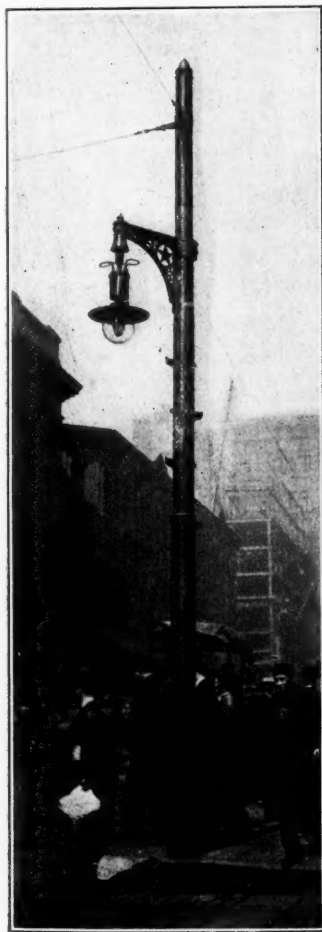


AT FINE ARTS MUSEUM

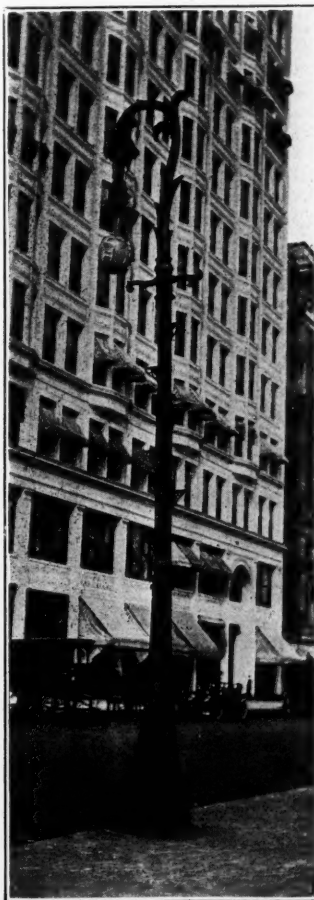
In front of the Fine Arts Museum are four standards, each carrying seventeen 16-c. p. lamps.

By attaching brackets to steel trolley poles for holding arc lamps, the city not only saves the cost of poles, but also avoids the unnecessary multiplying of poles. This method is used in a number of places in the city, and is being extended wherever possible. Where there are no trolley poles, the same design of bracket is now being used, attached to special poles. These poles have cast iron bases, flaring out in

Eifel tower shape to a bottom flange. A steel shaft is set in this base, and plumbed by the aid of adjusting bolts. This type will be used exclusively in the future wherever underground circuits are put in.



BRACKET HOLDER ON  
TROLLEY POLE



GOOSENECK STANDARD

Old style, carries 2,000 c.p.  
open arc lamps. Spaced 220 ft.

## ELECTRIC STREET LIGHTING

Comparative Statement of Costs in Massachusetts Cities—  
Hours Per Year Lighted Per Dollar of Cost—Light  
Should be Purchased by Kilowatt-Hours

BY WILLIAM L. PUFFER

THE following figures explaining the essential feature of the street lighting problem and the cost of the service were compiled from the Report of the Massachusetts Gas and Electric Light Commission for 1907. In order to make the question clear to officials not versed in the technology of electricity, electrical terms such as amperes, volts and kilowatts were eliminated with little sacrifice of accuracy.

This table was prepared in connection with the study made of a Massachusetts plant with a view to improving the service. In the case examined, it was found that the cost of electric arc lights was relatively high because the amount of current purchased was not large and a small plant supplied it. The investigation resulted in the purchase by the city of an increased number of lights operated for a larger number of hours but at a less cost per hour; in spite of which reduction in price the revenue of the company was not decreased. The accompanying table, which was used in explaining the condition of affairs, shows the number of hours during which arc lights are burned for the sum of one dollar in the 120 cities and towns covered by the Commission's report. In this way all technical terms were eliminated and the advantages of a comparative study made clear.

Of course it is not to be assumed that the result in hours per dollar is an exact measure of the efficiency and economy of the service. The whole question of candle power is eliminated, except so far as indicated in the conventional ratings of lamps as given in the first column. The ratings of candle power vary from 1,200 to 2,000, but what the illumination actually is would be a matter for further investigation in each instance. It may be stated in passing, however, that the writer has tested 2,000 candle power lights that gave less illumination than 1,200 candle power lights. The only right way to purchase light is by current consumed. In this tabulation incandescent lighting is not considered at all, but comparison may be made in cities using this system by assuming that five incandescent lights are equal in value to one arc light. As a practical matter, if five incandescents were well placed, the illumination would in many cases be better.

The second column, giving the number of hours which lamps burn in a year, shows a variation from about 1,200 to 4,000 hours. Here, of course, the question of moonlight or all night service is the principal factor. A practical matter in which some cities, especially suburban towns, gain advantage over others, arises from the custom of extinguishing the lights at a certain time, say twenty minutes after the last railroad train or trolley arrives from the neighboring city.

The most valuable information is that contained in the last column of the table, which shows the number of



hours a lamp burns per dollar of cost, the cost per year being properly based approximately on the number of hours of service required. It will be seen that the number of hours burned per dollar covers a very wide range, varying from 10.9 hours in Cottage City to 77 hours in Concord. While the presumption is that the city obtaining a large number of hours per dollar is making a good bargain, there are circumstances which make variation unavoidable. Cities obtaining current in small quantities from little plants naturally pay high. The question of hydraulic or steam power cuts a large figure in the problem, although the low cost of production of current by means of water power may be taken up in interest and other fixed charges. Some of the cities having low rates from hydraulic plants are Turner Falls, Lawrence and Adams. The good showing made by some municipal plants given near the bottom of this column is interesting, and, if charges for depreciation and amortization are sufficient and no undue expense charged up to commercial service supplied, the result is very commendable. In the case of Concord it may be noticed that the plant supplies power to a sewage pumping station, which may benefit the lighting account.

#### HOURS PER YEAR AND HOURS PER DOLLAR

Of All Cities and Towns in Massachusetts

Town.	Candle power.	Hours operated per year.	Hours per dollar.
Cottage City .....	1200	1253	10.9
*Miller's Falls .....	1200	1260	14.9
Williamsburg .....	1200	1320	17.6
*Belmont .....	1200	1840	17.75
Winchendon .....	1200	1410	18.8
Dedham .....	2000	1830	19.0
Franklin .....	1200	1445	19.3
Easthampton .....	1200	1305	19.35
Athol .....	1200	1450	19.35
Bridgewater .....	1200	1360	19.45
Lexington .....	1200	1525	20.4
Randolph .....	1200	1430	20.4
Whitman .....	1200	1660	20.8
Hardwick .....	1200	1560	20.9
*Wakefield .....	1200	1205	21.25
Foxboro .....	1200	1595	21.3
Plymouth .....	1200	1820	21.4
Plymouth .....	1200	3850	21.4
Ashland .....	2000	1662	21.4
Canton .....	2000	1525	21.4
Somerville .....	2000	3800	21.4
Framingham .....	2000	1360	21.4
Holliston .....	2000	1385	21.4
Winchester .....	2000	1430	21.4
Woburn .....	2000	1510	21.4
Stoneham .....	2000	1370	21.4
Walpole .....	2000	1510	21.4
Nantucket .....	2000	1315	21.95
Millbury .....	1200	1490	22.0
Spencer .....	1200	1660	22.2
Gardner .....	1200	1670	22.3
Weymouth .....	1200	1570	22.4
Monson .....	1200	1675	22.35
Palmer .....	1200	1675	22.35
Warren .....	1200	1675	22.35
Wilbraham .....	1200	1675	22.35
Westboro .....	1200	1630	23.2
Amherst .....	2000	1622	23.2
Pittsfield .....	1200	2080	23.3
Orange .....	1200	1660	23.7
Abington .....	1200	1600	23.9
Newburyport .....	1200	1770	24.1
Buckland .....	1200	2210	24.5
*Hudson .....	1200	2070	24.8
Amesbury .....	1200	1865	24.85
Stockbridge .....	1200	1920	25.3
Attleboro .....	1200	1900	25.3
Maynard .....	1200	1915	25.55
Cohasset .....	1200	1790	25.7
*Middleboro .....	1200	3360	25.7
Winthrop .....	2000	2080	26.0

Methuen .....	2000	1835	26.3
Leominster .....	1200	2900	26.4
Leominster .....	1200	1910	26.6
Blackstone .....	2000	3935	27.1
Milford .....	1200	2330	27.1
*Middleboro .....	1200	1265	27.5
Melrose .....	2000	1950	27.5
Weston .....	2000	1730	27.6
Marlboro .....	2000	2440	27.9
Northampton .....	1200	1970	28.2
Waltham .....	1200	2440	29.1
Charlestown .....	2000	3840	30.1
Hyde Park .....	2000	2150	30.8
Quincy .....	1200	2160	30.9
Boston .....	2000	3830	30.9
Natick .....	2000	2290	31.4
Malden .....	2000	3870	31.5
Arlington .....	2000	2405	32.9
Andover .....	2000	2310	33.1
Clinton .....	1200	3980	33.1
Gloucester .....	1200	2690	33.2
Saugus .....	1200	2240	33.4
Huntington .....	1200	2370	33.9
Ayer .....	1200	2555	34.1
Revere .....	2000	3070	35.0
Cambridge .....	1200	3250	35.2
Ware .....	1200	3160	35.7
Everett .....	2000	3150	35.8
*Danvers .....	1200	1765	35.8
Fall River .....	2000	3940	36.1
Fitchburg .....	2000	3940	36.1
North Andover .....	1200	2345	36.1
Medford .....	2000	3330	37.0
Shelburne .....	1200	3710	37.1
Haverhill .....	2000	3800	37.1
Chelsea .....	2000	3800	38.3
*Chicopee .....	1200	2975	39.3
New Bedford .....	1200	3870	39.4
Lowell .....	2000	3950	39.5
Lynn .....	2000	3940	40.0
Watertown .....	1200	4010	40.1
Nahant .....	1200	2970	40.4
*Reading .....	1200	1670	40.4
Williamstown .....	1200	2660	40.5
*Braintree .....	1200	2435	41.3
Turners Falls .....	1200	3650	41.75
Greenfield .....	2000	3660	41.8
Swampscott .....	1200	3120	42.5
Worcester .....	1200	3900	42.8
Northampton .....	1200	3870	43.1
Beverly .....	1200	3935	43.8
Lawrence .....	2000	3980	44.2
Lawrence .....	1200	3980	49.7
*Templeton .....	1200	1575	45.4
Brockton .....	1200	3950	45.4
Newton .....	1200	4090	45.55
Springfield .....	1200	3940	46.4
*Hingham .....	1200	1520	47.7
Adams .....	2000	3940	48.0
North Adams .....	2000	3940	48.0
Pittsfield .....	1200	3800	48.5
West Springfield .....	1200	3940	50.4
Springfield .....	1200	3940	50.4
Ludlow .....	1200	3940	52.5
*Taunton .....	1200	3800	52.7
*Mansfield .....	1200	3900	55.8
*Marblehead .....	1600	3110	74.0
*Peabody .....	1200	3430	75.6
*Concord .....	2000	3040	77.0

\*Municipal plants.

#### PAVING IN SPRINGFIELD

THE Report of the Springfield, Mass., Street Department for last year shows that the city laid 327 square yards of Syracuse brick on a 5-inch concrete base, the concrete consisting of one cement, two sand and six trap rock, at a cost of \$2.61 per square yard. On the main thoroughfare granite block was removed at the request of the merchants and business men along the street, and wood block pavement substituted. This was laid on a 5-inch concrete base, the blocks being bedded directly in a cement mortar bed spread on concrete. The joints were filled with Portland cement grout. The cost of the 4,590 square yards was \$3.34 per square yard.



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OCTOBER 7, 1908.

## CONTENTS

Columbus Municipal Lighting Plant (Illustrated). By G. H. Gamper, Superintendent, Department of Lighting.....	479
New Mantles for Gas Lights.....	487
Ownership of Service Pipes.....	487
Recent Work in New Orleans.....	488
Moving Picture Show Regulations.....	488
Cost of Gas and Naphtha Lighting. By Alton D. Adams.....	489
Sidewalk Paving by City by Contract.....	491
Street Lighting in Chicago (Illustrated).....	492
Electric Street Lighting. By William L. Puffer.....	493
Paving in Springfield.....	494
Business Methods vs. Politics.....	495
Municipal Bond Sales During August.....	496
Sewage Disposal in England.....	497
News of the Municipalities.....	501
Legal News—A Summary and Notes of Recent Decisions.....	507
Discussions, Questions and Answers.....	508
Municipal Appliances (Illustrated).....	510
The Municipal Index.....	511
Book Reviews.....	513
News of the Societies.....	514
The Week's Contract News.....	516
Personals.....	531
Patent Claims.....	531
Incorporations.....	531
Trade Notes.....	532

## Business Methods vs. Politics

A FEW months ago we gave a description of the system by use of which the cost of street cleaning in Richmond Borough, New York, was cut in half. In this issue is described the system which has done much toward making possible a similar reduction in the cost of municipal street lighting in Columbus.

Great credit is due to Superintendent Gamper for the results which he is obtaining. His modesty, or other good reasons, caused him to omit from his article reference to many things in this connection which, how-

ever, our representative learned on a recent visit to that city. Previous to the first of the year, when Mr. Gamper took charge, no records of any kind had been kept other than auditor's records, which gave no information regarding the details of operation of the Department; the plant had not been kept in repair and had fallen into an inefficient condition, and everything was run loosely, with no knowledge of what any given service was costing.

We understand that before being appointed Mr. Gamper was promised that he would be allowed to run the plant on a strictly business basis; select—and discharge—his own men and purchase all materials in the open market. Apparently the promise has been kept. Much of the result can be learned from the article. But since records of the past are wanting no detailed comparison of the saving effected is possible, except between gross totals. The coal used is the same grade from the same mines, but the consumption has been reduced 40 per cent., although the number of lights has been considerably increased. The labor cost has been reduced 25 to 30 per cent. in spite of the fact that many special duties have been temporarily assumed by the Department, such as modernizing the plant, obtaining a record of the poles and other work of a similar nature.

While system and the man who inaugurated it are largely responsible for these improved conditions, the elimination of politics made possible the introduction of both—"politics" in that sense which has made American city government a byword in Europe and caused many to doubt the permanence of this Republic. Municipal operation of many classes of utilities is a good thing; of some it is a recognized necessity, such as policing a city and cleaning its streets. But municipal operation cannot be a success where city employees feel that political pull will save them from discharge in any event, or at the worst secure them a position in another department; where every head of a department is not held responsible for its operation and therefore in absolute control of his subordinates therein. Contracts must be let by merit, not by favor. And accounts should be kept and rendered which will inform the people of the exact cost and manner of conducting the department.

All the thieves, defaulting cashiers and other purloiners of public funds combined do not rob the public of as great a sum each year as does politics. Of the billion dollars which our city governments spend each year a large percentage is undoubtedly lost; not stolen, but paid out in salaries and wages for which no adequate return is received, for materials which are wasted or are ill adapted to their purpose, or because of the lack of a businesslike co-ordination of the various city departments, as when the water or sewer department tears up a pavement just laid by the street department. Put strong, honest business men in charge of city work for which they have had special training and let them demonstrate to the taxpayers how much politics has been costing them, and political control of office for party or private ends will cease; or the citizens deserve to be bled, and will continue to be.

## MUNICIPAL BOND SALES DURING AUGUST

NAME OF CITY	Estimated Population	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)			Ratio of as'd to act'l value	Bonded Debt	Sinking Fund	NET BONDED DEBT.		Tax Rate Per \$1,000 Ass'd Value	BOND SALES, AUGUST, 1908				Basis
		Total	Capita					Total	Per Capita		Term of Years	Amount	Interest	Price	
Elyton, Ala.	3,500	\$3,000,000	\$86	33 1/2%	\$75,000			\$	\$5.00	30	\$40,000	5% s.a.	Par	.....	
Mobile, Ala.	65,000	26,486,202	407	25%	3,777,500	\$65,650	\$3,711,850	57.00	6.00	1-10 op.	145,000	5%	Par	.....	
Montgomery, Ala.	63,000	20,826,743	330	50%				11.25	30	100,000	5% s.a.	100.50	4.967		
Prattville, Ala.	2,047	1,300,000	635	60%	40,000		40,000	19.00	4.00	30	40,000	5%	Par	.....	
Tuscaloosa, Ala.	7,140	7,319,943	1,025	33%	138,800		138,800	19.00	5.00	30	75,000	5% s.a.	101.533	4.901	
Sacramento, Cal.	50,000	27,000,000	540	50%	775,000		775,000	15.00	15.00	1-10 ser.	50,000	4% s.a.	Par	.....	
										1-30 ser.	75,000	4% s.a.	Par	.....	
San Fernando, Cal.											30,000	5%	101.93	.....	
Upland, Cal.										20 1/2 av.	50,000	5% s.a.	101.832	4.856	
Visalia, Cal.										21 av.	45,000	5% s.a.	106.537	4.515	
Boulder, Colo.										20	30,000	4 1/2%	95.00	4.89	
Linton, Ind.										5-15 ser.	12,000	4 1/2%	100.417	4.447	
Paoli, Ind.	1,200	850,000	708	50%	325				7.00	5-5-6 av.	7,955	4 1/2% s.a.	101.695	4.159	
Rockville, Ind.											18,000	4%	100.027	.....	
Terre Haute, Ind.	65,000	50,000,000	777	61%	506,000	40,000	466,000	7.00	10.50	8-10 op.-av.	70,000	4% s.a.	101.115	3.836	
Burlington, Ia.	30,000	15,404,864	513	25%	180,000		180,000	6.00	8.91	5-10 op.	89,500	4%	Par	.....	
Lexington, Ky.	45,000	30,000,000	666	74%	982,461		982,461	21.00	17.00	40	13,000	4%	Par	.....	
West Covington, Ky.										10-30 op.	8,600	5% a.	101.143	4.854	
Bangor, Me.										20	125,000	5% s.a.	102.33	3.828	
Portland, Me.	60,000	54,184,011	903	100%	2,565,000	1,309,885	1,255,115	20.00	21.60	4 mos.	1,950,000	4% s.a.	100.04	.....	
Salisbury, Md.										13 1/2-19 op.-av.	30,000	4 1/2% s.a.	104.135	4.094	
Manchester, Mass.										14 av.	160,000	4% s.a.	105.035	3.541	
West Springfield, Mass.											29,000		103.516	.....	
Albion, Mich.										1-10 ser.	30,000	5 1/2% s.a.	101.833	4.123	
E. Jordan, Mich.	3,000	600,000	200	20%	18,000		18,000	6.00	15.00	10	19,824	5%	Par	.....	
Highland Park, Mich.										20	10,000	4 1/2% a.	102.00	4.347	
Iron River, Mich.										5	25,000		101.20	.....	
Sault Ste. Marie, Mich.										20	40,000	4 1/2% s.a.	101.28	4.403	
Lindstrom, Minn.	700	400,000	571	33 1/2%	1,500		1,500	2.10		1-3 ser.	1,500	5% a.	Par	.....	
Luverne, Minn.										1-10 ser.	5,000	5% s.a.	Par	.....	
Pilot, Minn.											2,500		Par	.....	
Sartell, Minn.										5-9 ser.	500	6%	Par	.....	
Excelsior Springs, Mo.										10-20 op.	5,000	5%	104.032	4.494	
Gresham, Neb.										5-20 op.	12,000	5%	101.008	4.77	
Sidney, Neb.										5-20 op.	8,500	6% a.	Par	.....	
Wahoo, Neb.	2,500	2,500,000	1,000	20%	84,000	2,000	82,000	32.00	31.00	5-20 op.	20,000	6% a.	102.00	5.503	
Reno, Nev.	12,000	7,700,000	641	70%	130,000		130,000	10.00	1.80	9 1/2-25 op.	65,000	5% s.a.	Par	.....	
Belleville, N. J.										25 1/2 av.	50,000	5% s.a.	Par	.....	
Arcade, N. Y.	13,000	7,000,000	538	75%	40,000		40,000	3.00	7.00	5-24 ser.	45,000	4 1/2% s.a.	104.133	4.235	
Bronxville, N. Y.	1,300	1,834,000	1,411	100%	64,000		64,000	49.23	15.00	5-10 ser.	20,000	4.40%	100.133	4.387	
Forestport, N. Y.	704	150,000	213	57%	25,000		25,000	36.00	2.00	1-3	11,000	6.45%	100.19	4.419	
Fort Plain, N. Y.										5-29 ser.	3,000	5%	100.66	4.653	
Larchmont, N. Y.										5-24 ser.	25,000	4.35%	100.02	4.348	
Newburg, N. Y.	26,000	25,000,000	943		585,899.97	14,269.70	571,630.27	21.57	22.40	1-10 ser.	30,000	4.30%	100.068	4.289	
										4-5-6 av.	4,000	4 1/2% s.a.	100.37	4.422	
										15 1/2 avg.	145,000	5% s.a.	102.78	4.354	
										6-5-6 av.	25,000	5% s.a.	109.31	4.178	
										1-5 op.	22,000	5% s.a.	104.038	4.309	
										17 1/2 av.	26,000	5% s.a.	100.107	4.90	
										5-19 ser.	111,000	5% s.a.	110.133	4.172	
Northport, N. Y.										15,000	5%	100.47	4.947		
Owego, N. Y.	5,300	3,045,055	574	90%	53,000		53,000	10.00	13.45	1-6 ser.	3,000	4 1/2% a.	102.00	3.884	
Royalton, N. Y.										1 1/2	2,000	4.95%	Par	.....	
Shortsville, N. Y.										5-29 ser.	30,000	4.40%	100.127	4.386	
Troy, N. Y.	76,000	55,986,974	736	100%	3,956,606	148,355	3,808,251	50.00	16.90	2 mos.	150,000	5%	100.297	.....	
Utica, N. Y.	72,500	41,252,122	569	65%	1,747,650		1,747,650	24.00	17.38	1-20 ser.	50,000	4 1/2%	102.187	4.193	
										4 av.	15,654	4 1/2%	102.187	4.193	
										1-6 ser.	3,926	5%	102.187	4.193	
Warwick, N. Y.	1,900	818,475	430	50%	28,000		28,000	14.00	7.88		23,000	4 1/2%	101.43	.....	
Waterloo, N. Y.	4,500	2,918,238	648	66 1/2%	96,000		96,000	21.00	8.51	1-30 ser.	90,000	4.30%	100.044	4.296	
White Plains, N. Y.	14,500				1,397,000		1,397,000	96.35	10.51	30	139,000	4 1/2% s.a.	104.09	4.257	
										31-34 ser.	20,000	4 1/2% s.a.	103.84	4.287	
Rocky Mount, N. C.	7,901	5,000,000	632	69%	80,000		80,000	10.00	1.15	40	10,000	5% s.a.	100.28	4.984	
Courtney, N. D.										20	5,000	4%	Par	.....	
Akron, O.	50,000	40,000,000	800	75%	1,280,995		1,280,995	25.62	32.00	3-1-6 av.	87,080	5% a.	101.956	4.32	
Alliance, O.	15,000	12,467,370	831	33 1/2%	578,190		578,190	38.54	30.20	1-5 ser.	13,500	4% s.a.	102.20	4.21	
										15	3,300	5 1/2% s.a.	108.849	3.725	
Ashtabula, O.										1-10 ser.	16,500	5% s.a.	103.76	4.226	
Byesville, O.										3-27 ser.	5,000	4% s.a.	106.54	4.40	
Carrollton, O.										1-10 ser.	15,780	5% s.a.	104.435	4.091	
Chardon, O.										1-20 ser.	8,000	5%	105.55	4.436	
										4 1/2-9 op.-av.	400	4 1/2%	101.93	4.02	
										4 1/2-9 op.-av.	925	4 1/2%	101.86	4.02	
										4 1/2-9 op.-av.	500	4 1/2%	101.60	4.10	
										4 1/2-9 op.-av.	1,500	4 1/2%	101.334	4.17	
										4 1/2-9 op.-av.	850	4 1/2%	100.94	4.20	
										4 1/2-9 op.-av.	2,150	4 1/2%	101.32	4.17	
										4 1/2-9 op.-av.	6,200	4 1/2%	100.81	4.30	
Corlett, O.										7 1/2 av.	6,875	5% s.a.	102.185	4.704	
Cuyahoga Falls, O.	4,000	4,000,000	1,000	30%	71,000	9,000	62,000	15.00	13.00	9 1/2 av.	9,000	5% s.a.	106.277	4.174	
Dayton, O.										20	23,000	4% s.a.	101.23	3.91	
Defiance, O.										10	18,000	5% s.a.	107.038	4.133	
Fostoria, O.										5-1-6 av.	22,000	4 1/2% s.a.	101.431	4.192	
Greenville, O.										9 1/2 av.	26,500	4% a.	Par	.....	
Hamilton, O.	30,000	22,200,000	733	50%	1,064,505	54,684	1,009,821	33.66		20	25,000	4%			



MUNICIPAL BOND SALES DURING AUGUST—Continued

NAME OF CITY	Esti- mated Popu- lation	ACTUAL VALUE OF ASSESSABLE PROP- ERTY (estimated)		Ratio of as'd to act'l value	Bonded Debt	Sinking Fund	NET BONDED DEBT.		Tax Rate Per \$1,000 Ass'd Value	BOND SALES, AUGUST, 1908				Basis
		Total	Cap- ita				Total	Per Cap- ita		Term of Years	Amount	Interest	Price	
Uhrichsville, O.										25	\$4,500	4 1/2% a.	106.36	4.091
Youngstown, O.	60,483	\$56,882,000	\$940	50%	\$1,269,112	\$209,167	\$1,059,945	17.25	29.42	10 5-6 av.	41,000	5% s.a.	107.761	4.104
										3 1-6 av.	1,050	5% s.a.	100.119	4.958
										2 1/2 av.	2,300	5% s.a.	100.076	4.967
Guthrie, Okla.	11,648	10,000,000	858.51	20%	300,000		30,000	25.75	10.00	25	250,000	5% s.a.	Par	
Zoseburg, Ore.										20	35,000	5% s.a.	Par	
Shelby, Pa.										5-5 1/2 op.-av.	10,500	5% s.a.	100.60	4.863
Aspinwall, Pa.	4,000	4,729,000	1,182	62%	63,000	7,000	56,000	14.00	6.00	10-26 ser.	17,000	4 1/2% s.a.	100.294	4.476
Reading, Pa.	95,000	75,320,000	792	70%	1,206,000	244,966	962,034	10.00	10.00	12 5-6 av.	300,000	4 1/2% s.a.	101.097	3.89
Renovo, Pa.										10-30 op.	35,000	4 1/2% s.a.	100.413	4.448
South Canonsburg, Pa.										25	5,000	4 1/2% s.a.	100.20	4.486
South Sharon, Pa.										30	30,000	4 1/2% s.a.	Par	
Pierre, S. D.										20	15,000	5% a.	102.083	4.836
Vermillion, S. D.										7 1/2-10 op.-av.	20,000	5% a.	Par	
Brownsville, Tex.										20-40 op.	70,000	5% s.a.	Par	
Denison, Tex.	15,000	7,000,000	466	77%	251,000	67,000	184,000	12.00	15.00		100,000	5% s.a.	102.815	
Cashmere, Wash.	600	405,000	675	33 1/2%					7.50	20	10,000	5% s.a.	Par	
Wilson Creek, Wash.	500	225,000	450	60%					5.00	1-20 op.	7,000	5% s.a.	Par	
Elkins, W. Va.	6,000	10,000,000	1,666	50%					3.00	25 av.	45,000	5% s.a.	102.391	4.834
Hartford, Wis.										13 1/2 av.	27,000	5% s.a.	107.17	4.287
Rhineland, Wis.	6,500	3,000,000	444	85%	51,800		51,800	7.00	3.25	4 1/2 av.	14,000	5% s.a.	101.26	4.671

SEWAGE DISPOSAL IN ENGLAND

Report of Royal Commission—Comparison of Various Methods—Based on Evidence of Experts, Investigation of Plants and Laboratory Experiments—Sedimentation and Septic Tanks, Filters and Land Treatment—Standards for Effluents

Eight years ago a Royal Commission on Sewage Disposal was appointed to study and report upon this question. Their investigation was the most complete and exhaustive ever made of this subject, and their reports, issued from time to time, have been most valuable contributions to the world's information. This is their fifth report; the first having dealt with land treatment and the action of bacteria therein; the second presented certain papers by expert sanitarians, with little discussion; the third dealt with trade effluents, maintaining that these should be purified by the authorities rather than the manufacturers; and the fourth with the pollution of tidal waters and infection through the medium of shell fish. The fifth report has just been issued, and the Commission has prepared the following synopsis of it.

It is practicable to purify the sewage of towns to any degree required, either by land treatment or by artificial filters, and there is no essential difference between the two processes. The main questions, therefore, to be considered in the case of a town proposing to adopt a system of sewage purification are, first, what degree of purification is required in the circumstances of that town, and of the river or stream into which its liquid refuse is to be discharged; and, secondly, how the degree of purification required can, in the particular case, be most economically obtained.

We find that it is generally desirable to remove from the sewage, by a preliminary process, a considerable proportion of the grit and suspended matters before attempting to purify the sewage on land or filters.

TANK TREATMENT

Two or three hours' quiescence is usually sufficient to produce a tank liquor fairly free from suspended solids, but owing to the fact that some sewages contain a larger proportion than others of solids that settle very slowly, no general rule can be laid down as to the necessary period of quiescence. With this form of treatment the deposit in the tanks should be frequently removed. The amount of settlement effected does not depend alone upon the period of flow, but upon a number of other factors. If the tank liquor is to be treated upon

filters of fine material, the period of flow should generally be from ten to fifteen hours. The tanks should be cleaned out at least once a week.

All the organic solids present in sewage are not digested by septic tanks, the actual amount of digestion varying with the character of the sewage, the size of the tanks relative to the volume treated, and the frequency of cleansing. With a domestic sewage, and tanks worked at a twenty-four hours' rate, the digestion is about 25 per cent. The liquor issuing from septic tanks is bacteriologically almost as impure as the sewage entering the tanks. Domestic sewage which has been passed through a septic tank is not more easily oxidized in its passage through filters than domestic sewage which has been subjected to chemical precipitation or simple sedimentation. No definite rules can be laid down as to how long a septic tank should be run without cleaning. In the case of small sewage works (serving populations of, say, 100 to 10,000 persons), the tanks should generally be allowed to run, without cleaning, so long as the suspended matter in the tank liquor shows no signs of affecting the filters injuriously. For larger works it would generally be advisable to run off small quantities of sludge at short intervals of time. The rate of flow through a septic tank is a matter in which the needs of each place require special consideration, but at few places should the sewage be allowed to take longer than twenty-four, or less than twelve, hours to flow through the tank. In no case should less than two tanks be provided, and they should be arranged so that, if necessary, one tank can be used alone. As regards digestion of sludge and quality of tank liquor, a closed tank possesses no advantages over an open tank. There is less risk of nuisance if the tank and the feed channels to the filters are covered in. By passing septic tank liquor through tanks of a size sufficient to hold about one-quarter of the day's flow, with the addition of from 2 to 3 grains of lime per gallon to



the liquor, the suspended solids in the liquor are materially reduced, a considerably larger quantity of the liquor can be treated per cubic yard of filter, and the offensive character of the liquor is largely destroyed.

In the case of sewages which contain certain trade waste, and strong sewages from water-closet towns, it is generally desirable to subject the sewage to some form of chemical treatment before attempting to oxidize the organic matter contained in it. In most cases careful chemical precipitation materially aids the deposition of the suspended solids, and facilitates subsequent filtration. No general rule can be stated with regard to the capacity of precipitation tanks. With continuous flow, an eight hours' rate is usually sufficient to produce a fairly good tank liquor from a domestic sewage of average strength. If sewage is allowed to remain quiescent in the tank, two hours' settlement would usually suffice.

In the absence of special circumstances favoring a particular plan, it would appear that there is very little difference in annual cost between the various methods of tank treatment when taken in conjunction with the cost of subsequent filtration through percolating filters, assuming that the kind of filter adopted in each case is that which is best adapted to the particular tank treatment provided.

#### FILTERS

Within ordinary limits, the depth of a contact bed makes, practically, no difference to its efficiency per cubic yard. We think that it would be generally inadvisable to construct contact beds of a greater depth than 6 ft. or of a less depth than 2 ft. 6 in. For practical purposes and assuming good distribution, the same purification will be obtained from a given quantity of coarse material, whether it is arranged in the form of a deep or of a shallow percolating filter, if the volume of sewage liquor treated per cubic yard be the same in each case. With regard to percolating filters of fine material, if the liquid to be purified were absolutely free from suspended and colloidal solids, and if thorough aëration could be maintained, the statement just made for filters of coarse material might possibly hold good for filters of fine material also. In practise, however, these conditions can scarcely be maintained with large rates of flow, and we think that the greatest efficiency can be got out of a given quantity of fine material by arranging it in the form of a shallow filter rather than of a deep filter. But we are not in a position to make an exact quantitative statement as to the difference in efficiency of the two forms. The amount of sewage which can be purified per cubic yard of contact bed or of percolating filter varies—within practical limits—nearly inversely as the strength of the liquor treated. This statement is based on the assumption that the size of the material of which the filter is composed is, in each case, suitable to the character of the liquor treated, and that the material is arranged at the proper depth to secure maximum efficiency. Detailed particulars as to the amounts which can be treated per cubic yard of filter are given. Taking into account the gradual loss of capacity of contact beds, a cubic yard of material ar-

ranged in the form of a percolating filter will generally treat about twice as much tank liquor as a cubic yard of material in a contact bed. In the case of sewage containing substances which have an inhibitory effect upon the activity of micro-organisms, the working power per cubic yard of filter of either type may be more nearly equal. This point, however, is not clearly established. Percolating filters are better adapted to variations of flow than contact beds. Effluents from percolating filters are usually much better aërated than exuents from contact beds, and, apart from suspended solids, are of a more uniform character. On emptying a contact bed, the first flush is usually much more impure than the average effluent from the bed. The risk of nuisance from smell is greater with percolating filters than with contact beds. With percolating filters there is apt to be nuisance from flies, especially with filters constructed of coarse filtering material. In the warmer months of the year such filters swarm with members of the Psychodidæ, which, though appearing to breed and develop in the filters, may usually be seen in large numbers on the walls of houses, or buildings close to or on the works.

#### TREATMENT ON LAND

There is no essential distinction between effluents from land and effluents from artificially constructed filters. Effluents from those soils which are particularly well adapted for the purification of sewage contain only a very small quantity of unoxidized organic matter, and are usually of a higher class than effluents from artificial filters as at present constructed and used. Effluents from soils which are not well adapted for the purification of sewage may often be very impure.

In any case in which the Rivers Board should be of opinion that the sludging of a mill dam by turning the accumulated sludge into the stream would give rise to a nuisance, and that it would be financially practicable for the millowner to adopt some other method of cleansing the dam, the Rivers Board should be empowered, by notice, to direct the mill owner not to turn the sludge into the stream. It should be provided that any mill owner deeming himself aggrieved by such a direction, might, within some fixed period, appeal to the central authority. The decision of the central authority should be final. Should any cases arise, in which it is important that the sludge should not be turned into the stream, but in which the Rivers Board are of opinion that the cost of adopting any other method of cleansing the dam would be prohibitive to the mill owner, we recommend that the Rivers Board should be empowered to represent the case to the central authority, and that the central authority should be empowered, after due inquiry, to direct that the sludge shall not be turned into the stream. If the central authority should be satisfied that the cost of adopting some other method of cleansing the dam would be greater than the mill owner could be reasonably called upon to bear, they should be empowered to direct that a portion of the cost should be borne by the local authorities whose districts would be benefited.

## GENERAL

All the trade effluents of which we have had experience interfere with or retard processes of purification to some extent, but we are not aware of any case where the admixture of trade refuse makes it impracticable to purify the sewage upon land or by means of artificial processes, although in certain extreme cases special processes of preliminary treatment may be necessary.

All sewage works are liable, at times, to give off unpleasant smells; they should, therefore, be situated away from dwelling houses, wherever this is practicable. The nuisance is apt to be considerably greater where the sewage contains brewery refuse in any quantity; but, on the other hand, the presence of some trade effluents—such, *e. g.*, as iron salts or tarry matters—tends to render the process of purification less offensive. The extent of the risk of nuisance depends, however, not only on the character of the sewage, but also on the method of treatment adopted.

## CHOICE OF A METHOD

The selection of a method of sewage disposal should depend primarily on local conditions. If a sufficient quantity of good land, to which the sewage can gravitate, can be purchased for about £100 an acre, land treatment would usually be the cheapest method to adopt. In cases where only clay land is available, it would generally be cheaper and more satisfactory to provide artificial filters. Given conditions favorable to each process, there is little difference as regards cost between any of the different forms of tank treatment when these are considered along with the cost of subsequent filtration. Single contact will, generally, only yield a good effluent where the sewage to be treated is weak, and then only after good preliminary treatment. For the purification of partially settled weak sewage, and for well, as also for partially, settled sewage, of average strength, if the case is one in which a good effluent is required, double contact is necessary, while if a strong sewage has to be treated, triple contact is necessary, unless the preliminary treatment is exceptionally good. In nearly every case a greater rate of filtration per cubic yard can be adopted if the material is arranged in the form of a percolating filter than if it is used in contact beds. In many cases the rate of filtration through percolating filters may be double or nearly double what it could be with contact beds. Where the liquor to be treated contains much suspended matter, it is usually advisable to construct filters, whether contact or percolating, with coarse filtering material. Where the preliminary treatment has effectively removed the greater part of the suspended matter it is best to use fine material in the filters.

## STORM WATER

Storm overflows on branch sewers should be used sparingly, and should usually be set so as not to come into operation until the flow in the branch sewer is several times the maximum normal dry-weather flow in the sewer. No general rule can be laid down as to the increase in flow which should occur in the branch sewers before sewage is allowed to pass away by the overflow untreated. The Rivers Board, or in districts

where there is no Rivers Board, the county council should have power to require the local authority to alter any storm overflows which, in their opinion, permit of an excessive amount of unpurified sewage to flow over them. The local authority should have the right to appeal to the central authority in any case in which they consider that the requirement of the Rivers Board is unreasonable or impracticable of fulfilment. The general principle should be to prevent such an amount of unpurified sewage from passing over the overflow as would cause nuisance.

As a general rule, special stand-by tanks (two or more) should be provided at the works, and kept empty for the purpose of receiving the excess of storm water which cannot properly be passed through the ordinary tanks. As regards the amount which may be properly passed through the ordinary tanks, our experience shows that in storm times the rate of flow through these tanks may usually be increased to about three times the normal dry-weather rate without serious disadvantage. The overflow at the works should be made from these special tanks, and should be arranged so that it will not come into operation until the tanks are full. Special filters which are only used in times of storm are not usually efficient and should not be provided. Any extra quantity of sewage arriving at the works in storms, which has to be filtered, should be treated on the ordinary filters, which should be made sufficiently large for the purpose. As regards the size of the stand-by tanks, the amount of storm water sewage to be filtered, and the arrangements generally for dealing with the storm sewage at the outfall works, the Rivers Board or the county council in areas in which no Rivers Boards have been established, should have similar power to that which we have proposed in regard to overflows on branch sewers, and the local authority should have a similar right of appeal to the central authority. In most cases it will probably suffice to provide stand-by tanks capable of holding one-quarter of the daily dry-weather flow, and it will not be necessary to provide for filtering more than three times the normal dry-weather flow. Under the arrangements which we recommend no storm sewage arriving at the outfall works would be discharged without some settlement.

## SEPARATE SYSTEMS OF SEWERS

In any case in which a local authority wishes to adopt the separate system of drainage for the whole or any part of their district, they should apply to the central authority, and that authority should be empowered to confer on the local authority, by order, such powers as are required. As regards the powers that are required, the provisions which are generally contained in local Acts in respect of this matter seem to be defective. If separate sewers are provided, the local authority should have a clear power to enforce the provision of separate drains, but the local Acts to which our attention has been drawn do not modify the powers of the local authority under the general law in regard to by-laws as to the drainage of houses. Moreover, the powers of the local authority should not necessarily be limited to new streets and new houses. As a general rule, the expense



of altering existing drains should fall on the local authority, and there may be some instances in which it would be equitable that they should bear some portion of the addition cost even in the case of new roads. The central authority should, therefore, have power to include in their order such provisions for the allocation of the cost as they consider equitable, having regard to the local circumstances.

#### STANDARDS FOR SEWAGE EFFLUENTS

Our terms of reference require us to have regard to the "economical and efficient" discharge of the duties of local authorities, and in view of the importance of not requiring a local authority to incur any further expenditure on sewage disposal than the circumstances of its area require, we feel strongly that the law should be altered so as to allow local circumstances to be taken into account. We recommend that the central authority should determine the nature of the tests which are to be applied for the purpose of standards, and that it should be made the duty of the Rivers Board, or of the county council in areas not under the jurisdiction of a Rivers Board, to determine, from time to time, subject to appeal to the central authority, what standards should be adopted. In the first instance it would be convenient that the central authority should prescribe one standard for all non-tidal waters, in place of the existing statutory provisions. It would then rest with the Rivers Board or county council to fix, subject to appeal to the central authority, a higher or lower standard in any case in which they were of opinion that the circumstances required or justified a different standard. We further recommend that no action should be allowed to be brought in respect of damage alleged to be due to the discharge of an effluent which complies with the standard fixed for the water into which it is discharged, but that in such cases complaint should be made to the central authority, and if a *prima-facie* case is made out, that authority should ascertain whether the complaint is well founded, and should be empowered to fix a different standard of the circumstances are shown to require it. In cases where it is alleged that the effluent does not comply with the statutory standard, and that damage is caused by the discharge of such effluent, action should be brought in the ordinary courts. But any questions arising as to whether the effluent complies with the statutory standard, or as to whether the damage has been caused by the discharge of the effluent in respect of which complaint is made, should be referred by the court to the central authority for determination. The costs of such determination should be borne by the parties to the action in such proportions as the court may determine. Power should be conferred on the central authority to suspend, from time to time, the operation of any standard, to allow time for the construction of works, or for any other reason which, in their opinion, justified such suspension.

According to our present knowledge, an effluent can best be judged by ascertaining, first, the amount of suspended solids which it contains, and, second, the rate at which the effluent, after the removal of the suspended solids, takes up oxygen from water. In applying this

test it is important that the suspended solids should be removed, and estimated separately. For the guidance of local authorities we may provisionally state that an effluent would generally be satisfactory if it complied with the following conditions:

- (1) That it should not contain more than 3 parts per 100,000 of suspended matter; and
- (2) That, after being filtered through filter paper, it should not absorb more than:
  - (a) 0.5 part by weight per 100,000 of dissolved or atmospheric oxygen in twenty-four hours.
  - (b) 1.0 part by weight per 100,000 of dissolved or atmospheric oxygen in forty-eight hours; or
  - (c) 1.5 parts by weight per 100,000 of dissolved or atmospheric oxygen in five days.

To secure the economical and efficient discharge of the duties of local authorities and others in regard to pollution, and adequately to protect the public health and the amenities of rivers, the statutory provisions in regard to these matters must be of an elastic character. The conditions of different cases vary to such an extent that the necessary control cannot, in our opinion, be provided by any direct enactment which could be enforced by the ordinary courts. Throughout our reports this fact has been fully recognized, and we have proposed, in regard to many matters, that ultimate control should be vested in an adequately equipped central administrative authority, and that, as far as practicable, the local Rivers Board should, in accordance with regulations framed by the central department, act as a first tribunal.

Among the more important questions which have to be dealt with under the new conditions of administration which we are contemplating are the following:

- (1) Disputes between local authorities and manufacturers as to the terms and conditions on which trade effluents shall be admitted into sewers.
- (2) The control of shell-fish layings so as to prevent the taking of shell-fish for human consumption from positions in which they are liable to risk of dangerous contamination.
- (3) The protection of water supplies from pollution.
- (4) The collection of information as to the water supplies available in various parts of the country.
- (5) The collection of information as to the need of water in various parts of the country.
- (6) The settlement of standards for different reaches of water.
- (7) Conferring powers on local authorities, in suitable cases, to provide separate systems of sewers for surface water and to enforce the provision of separate drains.
- (8) The settlement of questions as to the extra amount of sewage which a local authority should be required to treat during storms.

There are also numerous questions in regard to the purification of polluting liquids which, in the interests of the public, have still to be worked out, and it is essential that the central authority should be properly equipped for undertaking such special investigations as they may from time to time find necessary, and for collecting and collating the work done by others. Since the date of our appointment considerable developments have taken place in regard to the disposal of sewage, and there is every reason to think that further changes will occur in the future. Unless the central department keeps in close touch with all such changes, and from time to time report on them, it is not possible for local authorities throughout the country fully to utilize the results of valuable work which is being done at many places, and hence to perform their duties in the most economical as well as efficient manner.



## NEWS OF THE MUNICIPALITIES

Divers Subjects of General Interest and Their Treatment by City Councils and Officials—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

## ROADS AND PAVEMENTS

## Highway to Attract Winter Tourists

Aiken, S. C.—The Aiken County Commissioners and interested property owners are working together, with every prospect of success, to bring about the immediate construction of the 19-mile stretch of road, the proposed Aiken Boulevard, from Aiken to North Augusta. The road will benefit the county generally and be a source of business and profit to the winter hotels in Aiken, North Augusta and Augusta, attracting tourists who would otherwise pass by.

## Local Improvement Club to Be Formed

Elgin, Ill.—The first of the organizations to be formed for the purpose of promoting street and general municipal improvement was created when the Spring Street Improvement Club came into existence. At a meeting held in the City Council chamber a representative group of property owners on North Spring street met to discuss the proposed paving plans. Deciding that the most effective way of securing the improvement would be to form an improvement club, the men present held an election of officers and formed the nucleus of the organization. The officers named are as follows: President, L. B. Judson; secretary, Arthur B. Kerr. That the organization will be alive was shown in the first official act of the club, when L. N. Seaman made a motion that a petition be circulated asking the Council to frame necessary resolutions ordering that the street be placed in proper condition for paving, by making the necessary lateral sewer and water connections, placing telephone and electric light wires underground and performing other similar tasks, including the repairing of gas mains.

## Good Report on Asphalt Macadam

Elkhart, Ind.—John Gummer, a member of the South Main Street Property Owners' Paving Committee, which has visited Detroit, Pontiac, Muskegon and Milwaukee, has returned with a very favorable account of the Muskegon asphalt-macadam paving. He declares that its good qualities have not been exaggerated in the various reports that have reached Elkhart concerning it. He said that in Detroit and Pontiac the asphalt is bad and has always been unsatisfactory, while in Milwaukee he was told that wherever there was heavy traffic brick or granite was used. Muskegon has perhaps more brick than asphalt-macadam, but no brick has been laid there in eight years, since the other material was adopted. Muskegon has both sheet asphalt and asphalt-macadam. Though the sheet asphalt is smoother, it is more slippery and dangerous when wet, and the city engineer said the rougher was preferable. These asphalt pavements have been down from six to eight years, and Mr. Gummer says he was told that they had not cost a cent in repairs and yet were in first-class condition.

## Proposes Three Trunk Lines Through White Mountains

Littleton, N. H.—Governor Charles M. Floyd was the chief speaker at the annual banquet of the White Mountain Board of Trade, held at the Mount Look-Off Hotel at Sugar Hill, with an attendance of more than 100 members. The chief features of the Governor's speech was his advocacy of three parallel trunk lines of highway up and down the state from the Massachusetts line to the far northern boundaries of New Hampshire, declaring it his purpose to cause to be presented before the next Legislature a bill for the appropriation of \$100,000 for the purpose of establishing these roads. He would have it done in co-operation with the towns through which the roads will pass, the several towns, according to their size, to furnish their proportionate share of another \$100,000, which he regards as ample to carry out the work and to give New Hampshire the best system of roads in New England.

## Will Lay New Sample of Prohibited Material

Hamilton, O.—Charles A. Luck, representing the Asphalt Block Pavement Company, of Toledo, has offered to lay a sample piece of block asphalt paving of three or four hundred yards free of cost, in order to show that the material offered by his company is not the same as that hitherto laid in Hamilton and laid so unsuccessfully that an ordinance was passed prohibiting the further use of the material in the city. Council decided that a free sample need not be rejected, and a street of heavy traffic was accordingly picked out for its use.

## Paving Proceedings Must Be Repeated

Muskogee, Okla.—That every paving contract let by the city since the adjournment of the Legislature under the new paving law is illegal and void, is the opinion given to the Common Council by City Counsel N. A. Gibson. If this is correct the two recent contracts awarded to P. J. McNerny will be vitiated, as will also a contract let to W. R. Bush & Co., of St. Louis, aggregating nearly \$400,000. The Bush company has been at work on its contract some time, but the McNerny people have not commenced actual operations. Mr. Gibson bases his opinion on the recent decision of the Supreme Court in the case of the city of Oklahoma City vs. John W. Shields, contractor, in which the validity of the paving law passed by the Legislature was upheld. In the same decision, however, the Supreme Court decided that the paving law was not an emergency act and that it did not become effective immediately, as was assumed in the proceedings leading up to the contracts mentioned, but only after a period of 90 days.

## Streets Blocked with Paving Materials

Norfolk, Va.—Although it has been customary for the city to do such work itself by the employment of direct labor, recently a number of contracts had been let for setting curbstones and laying belgian blocks in gutters. The city apparently cannot do the work as quickly as contractors, and in consequence several thoroughfares have been blocked with belgian blocks and curbing stones for several months. In some sections of the city materials delivered along the line of proposed work in June have not been used. Grass has grown over the stone, and accidents, if not serious, have been frequent.

## Alameda County Boulevard Completed

Oakland, Cal.—Alameda County's scenic boulevard, the Foothill road, has been completed at a cost of \$300,000 after four years of work. The road is eleven miles long and seventy feet between curbs. The macadam is nine inches deep, and the best hard rock was used. The curbs consist of planks four inches wide by twelve deep. On each side of the driveway is a wide footwalk constructed of screenings mixed with oil. Catchbasins and drains carry away the ruff-off from the heaviest storms. Hydrants at regular intervals provide water for sprinkling.

## Gives Estimate of Municipal Asphalt Patching Plant

Utica, N. Y.—At a meeting of the Common Council Alderman Davis presented a report from a committee to report on the feasibility and probable cost of a municipal asphalt repair plant. The report estimates that a small plant can be built for \$12,500, one capable of laying 500 yards a day. The estimate of the cost of the work is given as 74 cents per square yard, the items being given as follows: Plant labor, 5 cents; power, fuel and supplies, 2 cents; labor cutting and laying, 7 cents; repairs to equipment and incidentals, 2 cents; asphalt, 33 cents; sand, 8 cents; limestone dust, 2 cents; interest on investment and depreciation, 10 cents; hauling, 5 cents. Citizens who have watched a gang of twenty-five or thirty men lay 100 or 150 yards of patching in a day are wondering how the charge for street labor is to be kept down to 7 cents.

**SEWERAGE AND SANITATION.****Chicago Has a Municipal Cow**

Chicago, Ill.—Chicago has a municipal cow. She was bought by a woman Health Department inspector, Dr. Caroline Hedger, to produce pure milk for desperately sick babies in a crowded tenement district, and, according to reports, this latest Chicago experiment in municipal ownership has been a great success. "I purchased the cow for the department," said Dr. Hedger. "I told Commissioner Evans I needed a cow to save the lives of the sick babies out my way, and he told me to buy one; so I did. Some friends of mine are taking care of her, milking her and taking the milk direct to the sick infants. It doesn't go through a dozen hands before it reaches the babies. We get enough milk to supply the babies of fourteen families."

**Tarring Sewer Inlets to Stop Odor**

Evansville, Ind.—Armed with buckets of tar hauled around by a dray, a force of workmen from the Board of Public Works office started to tar all sewer inlets in the city as a means of minimizing the stench nuisance from the mouths of sewers. The odor has become very annoying, owing to the drouth and the continued warm weather. Several weeks ago the Board of Health submitted a request to the Board of Works to have the tarring of inlets done as soon as possible, but at that time, according to statements from the Public Works office, no men were available, and the work was postponed. Tarring of the inlets is thought preferable to flushing the sewers. The water that would be turned into the sewers from city mains would not be sufficient to stop the odors originating therefrom. The use of disinfectant tar has been found serviceable in seasons past, and it is believed that it will answer the purpose of preventing odor this fall until a hard rain comes to flush the sewers.

**Mayor Orders Sewers Flushed**

Indianapolis, Ind.—Mayor Bookwalter conferred with City Sanitarian Buehler concerning the immediate flushing of all the sewers, in order that the public health might not be endangered. The absence of rain has kept the sewers from being flushed naturally for many weeks, and they are now in very bad condition. All of the main sewers on the North Side will be flushed at once. Dr. Buehler said he would consult the city engineer concerning the locations where the workmen could best accomplish the cleaning out of the entire sewer system. L. C. Boyd, vice-president of the Indianapolis Water Company, was called to the Mayor's office, and he told the Mayor and the Board of Public Works that his company still had a good supply of water, and that a sufficient amount could be furnished for flushing the sewers as the Mayor had planned.

**Combined Pumping Plant Saves Money**

Orange, N. J.—The first report has been submitted to the Orange Common Council of the operation of the joint sewer and water pumping station, which indicated that the plant may be maintained at a minimum expense within the estimates of James E. Denton, the engineer employed to supervise its construction. The report showed that in the past month the station pumped 87,195,000 gallons of water, an average of 2,812,745 gallons a day. During the same period there were pumped 16,515,000 gallons of sewage, an average of 532,743 daily. The total pumping of the plant was therefore 103,710,000 gallons, or 3,345,483 gallons per day. The expense for wages was \$663.80, and the total, which included coal and incidentals, was \$1,132.22. The coal used amounted to 8,570 pounds a day, and 390 gallons of water and sewage were pumped for each pound of coal, or 873,600 gallons for each ton.

**State Board Enjoins City from Discharging Sewage**

Phillipsburg, Pa.—In consequence of the failure of the city of Phillipsburg to obey the order of the State Sewerage Commission, the Board of Health, which has succeeded to the duties of the Commission, has applied for an injunction to restrain the city from discharging sewage into the Delaware River. The Commission had ordered the city to cease polluting the river by October 1.

**Septic Tanks and Sewage Farm Proposed**

South Pasadena, Cal.—A committee appointed by the Board of Trade to investigate methods of sewage disposal suitable for adoption in South Pasadena has made its report. In the course of their work the committee visited Pasadena, Santa Monica and Oxnard. They reached the conclusion that the proper system for their city was a system of septic tanks, from which the effluent would be carried to some neighboring farm land and used for irrigation. It was recommended that an engineer be employed to draw up plans and estimates.

**Low Water Intensifies Steam Pollution**

Westport, N. Y.—The water in Lake Champlain has reached the lowest point recorded in local history—nine feet below high-water mark. Steamers have been obliged to abandon many of their trips, on account of the impossibility of making landings. The mountain brooks are almost dry, and the beds of some of the largest rivers in this region are mere threads of water. The drought and forest fires have been ruinous to agricultural interests. Pulp mill pollution of the streams adds to the troubles of the inhabitants. The water of the AuSable River is a black, heavy fluid from this cause. The residents along its banks some time ago appealed to Governor Hughes to issue an executive order, in accordance with chapter 6 of the public health laws, to compel the mills to make sanitary disposition of their refuse, and they and people in other localities so afflicted will ask the Governor again to take steps toward the betterment of present conditions.

**Anti-smoke Law at Perth Amboy**

Perth Amboy, N. J.—An ordinance to prohibit the emission of smoke containing soot or other substances has been passed by the City Council, and is now a law. A penalty of any sum not less than \$25 or more than \$200 is provided. A ten-day sentence is provided in default of the payment of the fine. The matter was referred to the City Attorney for his opinion as to the powers of the Board of Aldermen in this connection.

**WATER SUPPLY****Claims Against Other Departments Arbitrated**

Cleveland, O.—An effort is being made through arbitrators to adjust the claims of the Water Department against various city departments for the use of water. Under the State law a municipal water department cannot charge other departments for the use of water. Superintendent E. W. Bemis, however, has set up the claim that the law refers to reasonable and necessary use. He claims that the law did not intend that water should be supplied free for mechanical purposes, such as the operation of elevators and ventilating fans. Nor does it refer to unreasonable or wasteful use, such as has occurred in a city cemetery, where the consumption per capita, so to speak, has been greater than it would be if the people were alive.

**Claim for Infringement to Be Resisted**

Harrisburg, Pa.—The Board of Public Works has sent a communication to Common Council stating that it would present an ordinance providing for the appropriation of \$2,196.56, received as premiums from the sale of public improvement bonds, for the purpose of fighting an alleged claim of infringement of patent rights by the local Water Department. The plaintiff against the city is the New York Continental Jewel Filtration Company, and City Solicitor Seitz, assisted by former Judge Jacobs, will represent the city. The Board of Public Works is confident it can successfully refute the claim.

**Town Finds Good Water Supply**

Livonia, N. Y.—Work on the two new wells sunk on the Nickerson property has been stopped, with one well driven to a depth of 133, the other at 185 feet. Both wells are full nearly to the tops, and the pumps at hand are unable to lower the water more than 28 feet from the top. The wells were sunk by the town, in preference to accepting an alternative proposition from a contractor to locate and sink wells, lay pipes and erect a pumping station for \$10,000. The town can do all this now and save money as a result of their enterprise.



### New Water Contract for Indianapolis

Indianapolis, Ind.—Members of the City Council are discussing among themselves the fact that the present contract between the city of Indianapolis and the Indianapolis Water Company expires December 31, 1908, and it is understood they are speculating as to whether or not it would be advisable to make any changes in the terms of the contract. Some of the important matters contained in the contract are the rates the city shall pay for fire hydrants, the privilege of the city to purchase the water plant, the extension of the mains and the use of the water by consumers.

### Ownership of Water Works and Light Plant

Macon, Ga.—The committee of Councilmen and citizens appointed by Mayor Miller to investigate the question of the city owning its own water works and lighting plant has held its first meeting. It was stated that in 1910 the city would be in a position to issue bonds of sufficient amount to buy the water works from the present owners or construct a new plant and to building a street lighting plant. A committee, Ben L. Jones, chairman, was appointed to investigate the cost of a new water works plant and estimate the value of the present plant. A. E. Chappell was made chairman of a committee to investigate the cost of erecting a street lighting plant. George S. Jones was made chairman of a committee to report on the success of municipal ownership generally.

### One City Benefits by Low Stage of Water

New Martinsville, O.—The city's water supply now comes from ten water wells drilled into the bed of the Ohio River, the gravel bottom furnishing a natural filter. The city, taking advantage of the lowest stage of water on record, decided to drill the wells into the bed of the river and keep pace with a number of other towns along the Ohio which now derive their water supply from similar wells. Some time ago the city attempted to sink a well of large diameter into the bed of the river, and, after spending a large amount of money on the scheme, gave up the attempt as fruitless. The attempt was made at a time when there was a high stage of water, and the contract was given to a local contractor. After working for several weeks the contract was finally surrendered, and it is said the city lost in the neighborhood of \$1,500 on the venture. By taking advantage of the low stage of water at the present time, the cost of drilling the ten wells and making the improvements to the city's water supply will not cost one-third of the amount lost on the first venture.

### Improvements to Washington's Water Works

Washington, D. C.—Extensive improvements are being made to the Dalecarlia, or receiving, reservoir, an important adjunct to the water supply system of the district. This reservoir is located on the Conduit road, a short distance above Georgetown, and has a storage capacity of 150,000,000 gallons. It is part of the original aqueduct system constructed about fifty years ago. It has rendered good service during most of that period. Several years ago, however, its efficiency became seriously impaired because of heavy deposits of silt and other material. The quantity of mud deposited in the reservoir since that time has averaged about 5,400 cubic yards a year. These deposits occurred mainly near the inlet, where the reservoir has the least natural depth. Observations showed, also that the waves washing on the shallow mud banks produced a considerable turbidity in the water flowing through the reservoir. The work of removing the sediment and riprapping the sides of the reservoir, which are earth embankments, has been going on since 1906. It is now estimated that that work will be finished in the spring. Improvements will then be made, if the present estimates pass, to the distributing reservoir at Georgetown. Apparatus for the preliminary treatment of Potomac River water by coagulation and slow sand filter at that point is also wanted.

### STREET LIGHTING AND ELECTRIC POWER

#### Municipal Lighting Plant Not Wanted

New Bedford, Mass.—The members of the special committee of the City Council appointed early in the year to consider the matter of establishing a municipal electric light and gas plant has decided that it is not desirable for the city to undertake the enterprise under the present law. Alderman Washburn said that in his opinion the city of New Bedford is situated in such a way that a great many people could not get the benefits of gas or electric light under municipal management except in their tax bills. "It would be a good deal like the city water," he said. "We have just reduced the price of water to the mills, and people who have been paying for water for thirty years haven't been able to get it yet. With municipal gas and electric light they would be in the same boat. I have paid a tax for water for twenty years, without a drop at my house."

#### Great Electrical Display Planned

Pittsburg, Pa.—Work has been started by the Allegheny County Light Company on its electrical display on Sixth avenue for the sesqui-centennial. The display will have a total of about 200,000 candlepower and will be the brightest illumination ever attempted in Pittsburg, it having twice the candlepower of the electrical court of honor on Fifth avenue. The display will consist of thirty flaming arc lamps, each of 5,000 candlepower, suspended from seven steel cables in the form of a giant arch. The cables will be anchored to the fifth floor of the Philadelphia Company Building and to a double-braced pole, sixty-five feet high, in the yard of the old Third Presbyterian Church. The arch will be sixty feet long, and at its center will be fifty feet above the street grade. At the upper corners will be the dates "1758" and "1908." It will require 1,000 sixteen-candlepower lamps to outline these dates. The sign proper will be forty-four feet long, with letters eight feet high and will require 2,000 sixteen-candlepower lamps of frosted glass. The sign will weigh about two and one-half tons.

#### A Liberal Gas Company

Yuma, Ariz.—The Yuma Electric and Water Company, which has recently purchased the local gas plant, has happily surprised the community by reducing the rates for gas. The price has been reduced to \$2 per thousand for all purposes. The old rate was \$2.25 for heating and \$3 for light.

#### Municipal Plant Makes Good Profit.

Wallingford, Conn.—The Board of Electrical Commissioners of the Borough of Wallingford has presented their annual report, showing a profit for the year of \$8,810.77, a gross income of \$27,877.94 and operating expenses of \$19,067.18. Charging off 5 per cent. for depreciation and 5 per cent. for profit, as required by law, the net balance is \$605.51. Since January the Quinpiac station, where power is generated by water, has supplied a day service, although about a fifth of its capacity has been used. The day service will be increased during the coming year. The report is signed by H. E. Biggins, W. H. Edsall and John P. Stevenson, Commissioners.

#### City Gives Up Light Plant

Washburn, Wis.—The Common Council has passed a resolution authorizing the Special Lighting Committee to turn back to the Washburn Electric Light & Power Company the electrical equipment purchased from that company over a year ago. Since the transfer of the property has been made the Council believes that the entire transaction was illegal and that they had exceeded their rights. In order to rectify the mistake, they have sought to turn the property back to the company. A settlement has been made whereby the city will turn back the plant and material, providing that the company will return the certificates of indebtedness and the bonds and coupons which were issued. The amicable settlement will save the expenses of a big lawsuit, which it was thought would occur before the settlement was reached.



## FIRE AND POLICE

### How Mounted Policeman Conducted Prisoner

Alexandria, La.—For pulling a negro through the streets with a rope around his neck, Policeman G. M. Lanius has been suspended from the police force for fifteen days. The negro had resisted arrest for drunkenness, and Lanius, who was mounted, lassoed him and rushed him to jail through the streets ankle deep in mud.

### Will Organize Detective Bureau

Altoona, Pa.—An ordinance is now in course of preparation and will be introduced in Councils, creating a bureau of detectives as an auxiliary to the Police Department. A very modest beginning will be made, however, as the ordinance will provide for only two detectives, it being the idea of the framers to add more later on as the city's financial condition will warrant. Under the terms of the measure which Councils will be asked to pass, the Chief of Police will be ex-officio head of the Bureau of Detectives. Those appointed must have had experience in the police business, and a salary larger than paid to patrolmen will be provided for the officers.

### Temporary Arrangement for Fire Protection

Augusta, Ga.—For purposes of fire protection, pending the completion of repairs to the city pumping stations, damaged by the recent high waters, the Fire Department has stationed a rotary pump fire engine at the city wharf, where it is connected so as to pump water from the river direct into the mains. The engine will remain at the river's edge fired up and with a full head of steam ready for instant service. An engineer will be on duty who will put the engine in action at the ringing of the fire bell. This arrangement is of special value, as it will increase the pressure in the cotton district, the danger zone.

### Fire Commissioner Is Good Financier

Cedar Rapids, Ia.—The Commission form of government is credited with having supplied Cedar Rapids with a Commissioner, who has succeeded in changing the usual deficiency in the Fire Department fund into a large surplus. In 1906 the deficit was \$700; in 1907, \$100; in 1908 the surplus is \$4,000, and, in addition, \$1,150 back bills were paid. Besides this amount expended, six new horses have been bought since the Commission plan went into effect, making the department the best equipped in the way of horses of any city in the State. Every particle of apparatus at all the stations has been thoroughly overhauled, repainted and put in first-class condition, including the complete rebuilding of the West Side wagon. New roofs have been put on two of the stations, and all the stations have been repainted. The fire boxes have all been treated to a new coat of paint; the Commission has paid for new uniforms for all the men, and after all these bills were paid there will be practically enough money left at the end of the year to complete a new station.

### Excellent Police and Fire Report Issued

Grand Rapids, Mich.—The annual reports of the Police and Fire departments for 1908 have just been issued in pamphlet form. It is one of the most exhaustive reports ever issued by these departments. The reports, which contain much tabulated information, are said to be more complete than those of any other city of its size. The figures of the police telephone service show that 40,000 reports were received each month.

### Policemen for Busy Crossings

Joliet, Ill.—Mayor John R. Cronin has sent a communication to Council requesting that body to provide special policemen for traffic duty in the congested portions of the city. He asks that policemen be stationed at the five principal street crossings, whose duties shall be to regulate vehicular traffic, guard persons crossing the streets and give necessary information to residents and visitors. The suggestion that a committee be appointed to draw up a suitable ordinance to cover the case was unanimously concurred in.

### Fixes Responsibility for Fire Loss

New Orleans, La.—Morris D. Pierce, engineer of the Louisiana Fire Prevention Bureau, has made a report on the fire of August 30, which destroyed fifty-four buildings and caused a loss of \$1,000,000. The building where the fire started was set on fire by an employee, and credit is given the Fire Marshal for detecting the crime. The alarm system is blamed—a box had to be broken open with an axe. The first stream of water was not put in operation until thirteen minutes after the alarm was sent in and sixteen minutes after the discovery of the fire. This delay is characterized as inexcusable. The building laws were clearly at fault—all walls, even party walls, failed. The water supply was utterly inadequate, though no more so than usual. Mr. Pierce says the Fire Department is poorly equipped, and as an example of its inefficiency he cites the fact that the water tower was not brought to the scene until an hour and a half had elapsed after the first alarm, and that then it was not used. Mayor Behrman, commenting on this report, calls it erroneous and misleading. He acknowledges, however, that the complaint of unsafe conditions of some of the old buildings truly described the condition, but the buildings were erected long before the present building laws were in force.

### Fire Commissioner Wants Lower Insurance Rates

New York, N. Y.—Fire Commissioner Nicholas Hayes and Commissioner John H. O'Brien, of the Department of Water Supply, have written to Mayor George B. McClellan pointing out the great success of the new high-pressure water system in quenching fires and suggesting that, as the fire hazards have been materially reduced, influence should be brought to bear on the underwriters to correspondingly reduce the insurance rates on buildings in the districts protected. Commissioner Hayes calls attention to the fact that the city has a total pumping capacity in fire boats of 78,000 gallons a minute, almost equal to that of the entire land force, and 35,000 gallons a minute from the high-pressure system.

### Month's Fire Loss Heavy.

New York, N. Y.—It is estimated that the fire losses of the country for September will total more than \$10,000,000 above the average. The prolonged drought, the great forest fires and their consequent destruction of small towns, a number of large mercantile houses and a flood of small losses on the Pacific Coast, in the middle West and the South are responsible for the figures.

### Locomotives Equipped for Fire Fighting

Pittsburg, Pa.—For the purposes of fire protection the Pennsylvania Railroad now has seventeen locomotives in the Pittsburg district equipped with fire hose and pumping machinery. During the past twenty years the insurance records of the company show that considerable good has been accomplished by the fire-fighting locomotives, and the number is now being largely increased. The apparatus has been simplified, and the amount of hose carried has been increased by substituting linen for cotton rubber-lined hose. The territory between Pittsburg and Swissvale, eight miles, has been divided into five districts, with a designated alarm signal for each section. The fire signals are on the block signal towers. When a fire is discovered the alarm for the district is sounded, and all engines within that district must immediately drop the work on which they may be engaged and hurry to the fire. It is the duty of the block signal man to keep the tracks open whenever an alarm is sounded, so that the engines can reach the fire without unnecessary delay.

### More Policemen for Capital City

Washington, D. C.—In his annual estimates for the next fiscal year, Major Richard Sylvester, Chief of Police, asks for an appropriation of \$1,100,000. This amount is \$50,000 more than he asked for last year and \$280,000 more than Congress allowed. He asks for ninety-four additional policemen and an increase of pay and promotion in grades of many more. In asking for the additional men the Chief calls attention that his force covers an area of seventy square miles, including eighty odd village towns and subdivisions, and a population of 339,403.

**GOVERNMENT AND FINANCE****First Report of Comparative Municipal Statistics**

Boston, Mass.—One of the most novel, interesting and in many respects most important reports ever issued under the direction of the Chief of the Bureau of Statistics of Labor is the "Comparative Financial Statistics of the Cities and Towns of Massachusetts," which covers the fiscal year ending between the periods of November 30, 1906, and April 1, 1907. Chief Gettemy's study of municipal accounts has prompted the following recommendations:

1. All financial transactions to which the municipality is a party should pass through the hands of one central official, the city or town treasurer, and should be made a matter of record on his books.
2. The expenses of departments should agree when checked up with recapitulations.
3. Trust funds should be administered by a common board of trustees.
4. The finances of the city of Boston and the county of Suffolk should be divorced and their accounts kept separately.
5. The act requiring assessors to make annual returns of assets and liabilities to the Tax Commissioner should be repealed.
6. A uniform fiscal year should be established.

**Charter Drawn with View to Annexing Suburbs**

Knoxville, Tenn.—At a meeting of the City Charter Committee the fact was brought out that there is pending a movement for the extension of the city upon the following lines: To make three or four different taxing districts of the city, as was done in Memphis, which meets the problems that are brought upon this score. Also for the charter to provide that where a territory is taken into the city, that the city shall issue bonds to the amount of 10 per cent. of the annexed territory, the proceeds of which shall be expended in improvements of that locality. This would give sewerage, schools, water, lights and fire protection and aid in grading streets. Under the abutting property plan the streets could be given a fine telford pavement that costs about \$6,000 to \$7,500 per mile and will be sufficient for the outlying sections of the city for many years. Of course, the property owners would have to lay their own sidewalks. In the matter of manufactories, the Memphis plan would care for them. It is believed that under the suggested plans the people living in the outlying districts would be willing to come into Knoxville. Then the newer parts of the city could have street lights which are so badly needed.

**Too Many Hundred Dollar Orders**

Lynn, Mass.—Mayor Porter says that the spirit of the law which provides that all work of more than \$100 in value shall have the approval of the Mayor before payment is made is too often violated. One of the greatest surprises of his work at the City Hall is the great number of bills for \$100 or a little less that are put through. Another peculiar and annoying feature is the hurry to get such measures as must be signed by the Mayor through his office. Just at the last moment the bill is brought in and the statement is always forthcoming that very few moments are available for examination of the matter.

**To Abolish Business Licenses**

Redlands, Cal.—Mayor Kingsbury recently brought up to the Board of Town Trustees the question of abolishing the custom of collecting business licenses from the merchants and professional men of the city. Mr. Kingsbury said that the business license tax is deservedly unpopular among the business men, who are thus charged with a burden for being enterprising. The business men are always the principal supporters of a municipality and are called upon for many purposes. They should not have the additional burden of a license tax, particularly when many who earn their livelihood within the city just as much as do those who are taxed go free. "It is unfair; it discriminates. I have never been in favor of it, and I believe we can get along without it," said the Chairman of the Board. Trustee Carroll remarked that the business men had never felt right over the imposition of this double tax, thus seeming to

intimate that he, too, is in favor of removing it. A question from Trustee Prendergast brought forth the information that the license tax produces approximately \$5,000 a year revenue.

**Protest Against Red Tape**

Washington, D. C.—The elimination of red tape in connection with the awarding of district contracts is recommended by Daniel E. Garges, chief clerk of the Engineering Department, in his annual report to the Commissioners. There is an overabundance of routine connected with contracts, which results in delay and embarrassment, Mr. Garges says, and he adds that, owing to delays, it has happened frequently that the work provided for by contract actually is performed before the contract is signed.

**REFUSE COLLECTION AND DISPOSAL****Parkways Now Practically Dustless**

Buffalo, N. Y.—Superintendent Brothers, of the Park Department, said that the system of sprinkling the roads in the park approaches with oil has proved to be successful, as the question of dust has been eliminated, while the roads require less repairing than under the old system. The cost of oil for such work last year was \$4,768. That is more than would have been expended had water been used, but the results warrant the additional expense.

**B. R. T. Loses City Ash Contract**

Brooklyn, N. Y.—The Board of Estimate and Apportionment has decided to discontinue removing ashes in Brooklyn by means of flat cars operated on the Brooklyn Rapid Transit lines and to award the ash removal contract for the next five years to the Borough Construction Company, which will use carts.

**Deep Sea Dumping Regulated**

Oakland, Cal.—Hereafter when the marine garbage van called the Signal from the city of Oakland makes its daily trip outside the Heads it will have to go far enough to make sure that debris is not floated back upon the San Franciscan shores, as in times past. The measure was passed recently by the Board of Health regulating the matter. Hereafter the Signal will go as far as the Farallones and there blow three whistles to notify the watchman of the arrival of the garbage. A red light will then be shown as a signal for the dumping of the garbage in deep water.

**Council Committee Decides the Solution of Refuse Question**

Portland, Ore.—Acting on the petition of the Sanitary Garbage Destruction Company for a franchise for twenty-five years to collect and consume the garbage of Portland, the Health and Police Committee of Council refused to listen to the plan of granting a franchise outright to the petitioners, but believed that a plan as suggested in the petition in regard to the disposal of the city's refuse in a far more sanitary and less expensive manner than at present could be worked out. After making certain suggestions to Deputy City Attorney Tomlinson as to their ideas, he was instructed to draft an ordinance calling for bids for a contract to gather and dispose of the garbage in the city, with the provision that the plant to be installed by the successful bidder could be acquired by the city at any time during the life of the contract. The contract will be awarded to the concern which will collect the garbage for the least charge. For years the destruction of garbage has been one of the most serious problems with which the city officials have wrestled. Several attempts have been made to build a crematory, but without success. The city officials could not even agree on the location of a site for a crematory, as no property owner or resident desired a crematory placed near his home, and whenever an attempt was made to secure a site for a crematory in any locality the residents of that neighborhood would flood the City Hall with remonstrances. Finally the officials gave up attempts to remedy conditions and have labored along with the old crematory, but it is fast going to decay and will last but a short time.



### Novel Feature in Garbage Reduction

Columbus, O.—It is proposed to introduce a novel feature in the garbage reduction process under consideration by the Service Board. The process considered is steam cooking. The novelty consists in evaporating the liquor pressed from the garbage and selling the residue as fertilizer. It is claimed that the Swift Packing Company use this process in Chicago and that the value of the fertilizer is \$100,000 a year. Still, it is not claimed that the sales will any more than repay the cost of evaporation.

### Garbage Bureau Organized

Scranton, Pa.—According to the terms of the ordinance organizing a garbage bureau, drawn up by Councilman Thomas, the department will consist of a superintendent of collection, at a salary of \$1,200 per annum; a superintendent of disposal, at \$1,500; a clerk at \$720; stokers at \$2 a day, and laborers at \$1.65.

### RAPID TRANSIT

#### Cleveland Railway Refuses Rent

Cleveland, O.—The Municipal Traction Company, which is operating the street railway property of the Cleveland Railway Company, has made a tender of its second quarterly rent charge upon conditions which caused its refusal. The rental is based upon an earning of 6 per cent. upon the capital of the owning company, \$14,000,000, which amounts to \$220,000 a quarter. This money constitutes the only earnings of the Cleveland Railway Company. Recently there has been a report in circulation that the Cleveland Railway Company officials intend to pass the present semi-annual dividend. When the \$220,000 rental money was offered by the leasing company, the Municipal Traction Company, it was upon the condition that the owning company agree not to pass the dividend. Secretary Davies, of the Cleveland Railway Company, refused to accept the money under those conditions, and the payment was withheld.

#### Railroad Commission on Trolley Regulation

Harrisburg, Pa.—The recent hearing held by the State Railroad Commission on its proposed prohibition of riding on platforms of trolley cars and rule for the regulation of speed and signals brought forty of the prominent street railway men of the State to the Capitol. Judge Nathaniel Ewing, President of the Commission, welcomed them. Stating that no rule had yet been made, he asked for the fullest expression of opinion by those present, among whom he recognized some of the most practical trolley men of the State. The Commission, he said, desired information so as to make a reasonable ruling. The discussion assumed a wide range, and the trolley men, in objecting to the prohibition of any riding on seats on the front platform, brought out the remark from Judge Ewing that the question was not one of capacity, but safety. Even if crowding on the platform is stopped, conversation might interfere with the motorman.

#### Freight Subway Proposed

New York, N. Y.—A plan for putting a freight subway along the waterfront of Manhattan has been submitted to the Public Service Commission by William J. Wilgus, who until recently was vice-president and chief engineer of the New York Central Railroad Company. Mr. Wilgus thinks such a subway would improve the commerce handling facilities of the city and relieve the traffic congestion in the streets caused by the trucking of freight from one pier to another. He purposes to build a four-track subway along the fronts of the North and East rivers, connect this subway by spurs with the various railroad piers and join it by a tunnel under the Hudson River with a freight "classification yard" to be laid out back of the Bergen Hills in New Jersey. In the yard the freight train of the railroads having terminals in Jersey City could be assembled and assorted and then dispatched to their destinations in New York through the tunnel and subway. Spur tracks would be run into the warehouses of corporations doing a large amount of shipping, much as is done in the case of the Chicago freight subway.

### Asks Franchise for Trolley Omnibuses

Newport News, Va.—A petition has been submitted to Council by a New York syndicate to run electric omnibuses in opposition to trolley cars. The franchise asked for is for twenty-five years, and more streets from time to time than are named in the original petition. The fare of five cents to be charged from end to end of the route is promised by the company and six tickets for a quarter; school and workmen's tickets to be at half price. The power is to be supplied by double wires put on brackets and poles inside the curb line.

### Express Cars on City Streets

Rochester, N. Y.—Mayor Edgerton has submitted for the consideration of Council an ordinance permitting the operation of express cars within the city streets under certain restrictions. The proposition is to allow one such car to run over any one interurban line at intervals of not more than every two hours. No such cars, however, are to be operated within certain congested districts.

### MISCELLANEOUS

#### Councils Inspect Public Works

Harrisburg, Pa.—The public works which were projected some years ago and whose construction has made Harrisburg famous and its people healthier and happier were inspected recently by members of City Councils and officials who deal with their control. It was an observation tour, unique in its features and covering over twenty miles. It gave every one a chance to see the actual conditions and to ask questions of the men in authority. The members of the municipal bodies in charge were the hosts, and the long hours of the inspection were pleasantly closed by a dinner. The entire improvement district, with a few exceptions, was covered, the route extending from Lochiel to Lucknow, and the observation tour will long be remembered not only for its interesting features, but by the influence it will exert on legislation.

#### Public Preferred to Quasi-public Markets

New Orleans, La.—Two efforts to sell a franchise for two public markets, which were unsuccessful on account of irregularities in the proceedings and protests of property owners, have brought up for discussion the general question of public markets. Several members of the Council are quite in accord with the views of the protestants, but they go further and are not in favor of the sale of any more so-called quasi-public markets, which are sold for a trifle, earn revenue for twenty-five years, and when turned over to the city are run down and in decay. The idea of these Councilmen is to have the city run all of the public markets, and, if there is need for a public market in any section of the city, build it out of the market revenues, which are high \$200,000 a year now—build it as were built the Ewing, Mehle and Memory markets, which are now yielding revenue to the city and will pay themselves out in a few years and every dollar thereafter be velvet. It is argued that the city never gets any satisfaction from the quasi-public markets, but there is always a chance for litigation.

#### It Is Queensborough Bridge

New York, N. Y.—The Board of Aldermen by a unanimous vote has adopted an ordinance changing the name of the Blackwell's Island Bridge to "Queensborough Bridge." The change was requested recently by John D. Crimmins and his associates on the committees in charge of the plans for the celebration at the opening of the bridge. The argument was that the name of a penal institution was not an appropriate one for the bridge.

#### San Francisco Will Publish a Municipal Record

San Francisco, Cal.—The Board of Supervisors have decided to issue a weekly publication, to be known as the "Municipal Record." About 2,000 copies will be printed and distributed free. The paper will contain reports of the Board of Public Works, showing progress on street, building and other work. The Fire Department and the Department of Electricity will also furnish regular reports.



## LEGAL NEWS

## Summary and Notes of Recent Decisions—Rulings of Municipal Interest

## PURCHASE OF WATER WORKS—CONTRACT

**Omaha Water Co. vs. City of Omaha.**—In 1880 the city of Omaha granted a franchise to a water company under Laws Nebraska, 1879, which authorized the city to construct and maintain water works "either within or without the corporate limits of the city," and to contract with others to construct and maintain water works on such terms as might be agreed upon. In the ordinance granting such franchise the city reserved the right to purchase the works of the company after twenty years at an appraised valuation. By a subsequent statute, still in force in 1903, the city was authorized to appropriate private property for water works purposes, or any system already constructed, the power to extend a distance of ten miles beyond the city limits. The laws of 1903 required the city to either construct or purchase water works and authorized it to take the necessary steps to acquire such water plant "by virtue of any rights inuring to such city through contract or otherwise." In 1903 the city elected to purchase the company's plant under the option reserved in the ordinance of 1880, and appraisers were selected by the parties to make the valuation. When the works were constructed, it was necessary to take the water from the Missouri river above the city, and the intake, pumping station and reservoirs were located in the town of Florence, and some miles outside the city limits. Between that time and 1903 the city had grown in population from 30,000 to 125,000 or more; the adjoining city of South Omaha, containing over 30,000 population, and other adjoining, but separate, municipalities had grown up, into all of which, including the town of Florence, the company had extended its distribution system which was supplied with water from its station at Florence. Held, that under such statutes the city had power to acquire the property of the company outside, as well as inside, of its limits, and that, when it made its election it elected to purchase the entire system and could not require the company to sell its pumping plant and the pipes connected therewith which extended into and lay within the city limits, and to retain its outlying distribution systems.—United States Circuit Court of Appeals.

## DEFECTIVE SIDEWALK

**Gardner vs. City of Philadelphia.**—A city was not negligent in failing to repair a defect in a sidewalk, consisting of a rut, in which plaintiff's heel caught, made by a push cart in soft snow or slush which had frozen on the walk, and then had become covered by one or two inches of fresh snow that had fallen the same morning, on which plaintiff was injured.—Supreme Court of Pennsylvania.

## SHORT WEIGHT DELIVERY A PENALTY

**Mayor, etc., of City of Newark vs. East Side Coal Co.**—Under the act entitled "An act for the protection of purchasers of coal," Act March 5, 1900, declaring that "any person, firm or corporation that shall sell or deliver, or attempt to sell or deliver, less than 2,000 pounds . . . to a net ton . . . shall be liable to a penalty," it is no defence that the coal dealer did not know of the shortage. That a dealer in coal hires a man with his wagon to get coal from a railroad company, on slips delivered to such company, and then to deliver it to the purchaser, such man being designated in the slips, by the dealer, as a driver, does not make such man an independent contractor, rather than the servant or agent of the dealer, so as to relieve the dealer from the penalty for attempting to deliver less than 2,000 pounds for a ton.—Supreme Court of New Jersey.

## SUSPENSION OF POLICEMAN

**Rees vs. City of Minneapolis.**—Where the Mayor of a municipality is vested by law with the power of appointment, removal, discipline, control, and supervision of its police force, he has authority to suspend a policeman from the performance of his duties, with or without pay, for the temporary purpose of investigating his conduct. Held, the trial court was warranted in finding from the evidence that it was not the intention of the Mayor to suspend the officer without pay.—Supreme Court of Minnesota.

## SPECIAL ASSESSMENTS—PENALTIES

**Miller vs. City of Seattle.**—Where special assessments are levied by a city for street improvements, the city has power to impose and collect a penalty and interest on delinquent payments beyond the actual necessities of the fund, which penalties and interest become a part of the fund.—Supreme Court of Washington.

## SEWER SYSTEM—MAP—TAXATION

**Mead et al. vs. Turner, Village President, et al.**—The Village law, providing that the Board of Sewer Commissioners of a village shall, before taking proceedings for the construction of a sewer system, prepare a map and plan of a permanent sewer system, with specifications of connections and outlets, or disposal works, does not require the map and plan to embrace every lateral sewer which may become necessary with the growth of the village. A proposition submitted to and adopted by the voters of a village, at an election held for the purpose, which authorizes the trustees thereof to construct a proposed sewer system at a maximum cost of \$100,000, and which authorizes the trustees to raise \$59,800 by the issue and sale of village bonds, gives by necessary implication power to the trustees to raise the balance of the cost by taxation, and they may levy a tax of \$40,200 for the construction of the system.—New York Supreme Court, Special Term.

## MILK STANDARDS—POISONOUS SUBSTANCES

**City of St. Louis vs. Wortman.**—Acts 1907, entitled "An act to prohibit the manufacture and sale of foods, \* \* \* and prescribing penalties for violation thereof," provides that food shall be deemed to be adulterated if it contains any added substance which is poisonous or injurious to health. Section 17 of Ordinance No. 20,808 of the city of St. Louis prohibits the adding to milk and cream of any foreign substance of whatsoever kind for any purpose. Held, that the ordinance and statute are so inconsistent and repugnant that they cannot both stand, as the ordinance prohibits adding any foreign substance, whether poisonous or injurious to health or not, while the statute prohibits only adding foreign substances which are poisonous or injurious to health, and hence the ordinance is repealed by necessary implication, and a prosecution cannot be maintained thereunder.—Supreme Court of Missouri.

## ASSESSMENT WARRANTS—CITY'S LIABILITY

**Jurey vs. City of Seattle.**—Special assessment warrants issued by the city of Seattle for local improvements are not obligations of the city; but the holders are required to look solely to the special fund for payment thereof. Where the city of Seattle wrongfully diverted a special assessment fund without paying warrants outstanding against it, the city thereby became liable ex delicto in damages to the owners of such warrants to the extent of such diversion only, for which the warrant owners were bound to present claims within thirty days after the same accrued, under the express provisions of Seattle City Charter, in order to maintain an action therefor against the city.—Supreme Court of Washington.

## TRESPASS—UNDERMINING LAND

**City of Chicago vs. Troy Laundry Machinery Co.**—In 1887 defendant city constructed a tunnel, 55 feet below the surface, across the lands in controversy, and on the completion of the tunnel began to pump water through it and continued to do so. In 1903 the owner erected a building on the land which he leased to plaintiff. In the preparation of the foundation a number of piles penetrated the tunnel, and after plaintiff took possession the flowing water carried away the soil so that the building sank. Defendant never obtained any right to enter or be on the land for any purpose from the owner or plaintiff, and neither knew of the tunnel until the damage was done. Held, that the forcing of water across the land was a continuing trespass and constituted the proximate cause of the injury, for which plaintiff was entitled to recover.—United States Circuit Court of Appeals.

## GRANT OF USE OF PUBLIC GROUNDS

**Larkin vs. City of Allegheny.**—Under the various acts of the Legislature of Pennsylvania relating thereto, as construed by the Supreme Court of the State, the city of Allegheny has authority to grant to a railroad company the right to use, for the purpose of erecting a railroad passenger station in part thereon, a portion of the ground set apart as commons by Act September 11, 1787, providing for laying out the town, and afterward granted to the city to be used for public purposes.—United States Circuit Court of Appeals.

## CHANGE OF GRADE—LIABILITY

**City of Akron vs. Huber.**—The doctrine recognized in this State respecting the liability of a municipality for injuries to improved abutting property resulting from changes in grades of streets does not extend such liability to a case in which no grade has been established prior to the improvement of the property, and where the grade subsequently established is not unreasonable.—Supreme Court of Ohio.

## DISCUSSIONS, QUESTIONS AND ANSWERS

Readers of the Municipal Journal and Engineer are invited to send for publication in this department inquiries concerning such matters as can probably be answered from the personal experiences of others, or from information on file in this office. Any who can furnish the desired information are requested to do so, in addition to any reply which may be given by us. It is especially desired that an exchange of opinions and discussions on mooted subjects find place here. We will welcome any opinions, whether or not we agree with them; requesting, however, the omission of all personalities.

### THIN BRICK PAVEMENTS

WILLIAMSPORT, PA., Sept. 10, 1908.

Editor MUNICIPAL JOURNAL AND ENGINEER, New York City.

DEAR SIR:—In your September 2 issue, page 328, under title of "Thin Brick Pavements," you have a report from Mr. Will P. Blair regarding the matter of using thin brick— $2\frac{1}{2}$ -inch. The city of Binghamton, N. Y., tried the use of such brick—the size being about  $2\frac{1}{2} \times 2\frac{1}{4} \times 8$  inches. These brick were used on a street previously paved with sheet asphalt and the brick were laid in 1905 to take place of the wearing surface of asphalt. I was told that the matter proved disappointing, inasmuch as the brick were not deep enough to sustain the traffic. I would be pleased to hear from some expert on this case and to learn what the city of Binghamton did with the street. Yours truly, J.

### SEPTIC TANK ROYALTY

Editor MUNICIPAL JOURNAL AND ENGINEER, New York City.

DEAR SIR:—In your issue of September 9, referring to the use of the septic tank in connection with a proposed sewage disposal plant for Butler, Pa., the following statement is made:

"The Council will probably have to pay a royalty to the Cameron Company which owns the patent for the device and which asks ten per cent. of the cost of a disposal plant for the right to use the tank."

It is true the Cameron company originally fixed a charge of ten per cent. on the cost of proposed plants for licenses to construct and operate them under the Cameron patent, but in order to further encourage the adoption of the process by municipalities and leave no reasonable grounds for jeopardizing its efficiency by possible attempts to evade the patent, the Cameron Septic Tank Company has decided on a uniform charge of five per cent.; several municipalities have taken advantage of this offer. This charge covers not only a license for the remaining life of the patent and possible renewals and extensions, but in applying for licenses municipalities are invited to submit general drawings of proposed plants with sufficient data to determine their probable efficiency.

We further contemplate the completion of an organization whereby we can keep in close touch with licensed plants to enable us to suggest improved methods of operation when necessary, for which service no additional charge will be made.

Yours very truly,

CAMERON SEPTIC TANK COMPANY,  
H. D. WYLLIE, General Manager.

### STREET RAILWAY FRANCHISES

Editor MUNICIPAL JOURNAL AND ENGINEER, New York City.

DEAR SIR:—Please advise me of the salient features embodied in street railway and electric railway franchise grants, now demanded by councils in the various cities throughout the country.

An inter-urban railway company at the present time is asking for a franchise within the corporate limits of this city, and I wish to gather all information possible.

Yours respectfully,

C. W. R.

Such franchises should generally contain provisions limiting the life of the franchise or providing for the purchase of the road by the city after a certain date, or both; requiring that on the main line and each of its branches there shall be run at least a stated number of cars each day; that within the city limits the company shall not lay T rails, but shall use a kind approved by the municipal authorities (T rails are allowed in some cities, however). There is ordinarily a provision that the company shall pave and maintain the street between and for, say, 18 inches outside of its outside rails (in some cases from curb to curb); and it is desirable that

they be required to sprinkle at least twice a day, either this space or the entire roadway, and also remove promptly from this space all snow when more than, say, three inches deep, and not merely plow or brush it to the sides of the road causing piles to accumulate there to the danger of teams. It should be provided that the paving be either the same kind which is laid in other parts of the street, or brick or stone block if requested by the city; and that whenever the city repaves or changes the grade of a street, the company shall do likewise in the space for which it is responsible. That all wires, except trolley wires, be placed in conduits when and wherever the city may direct other wires to be similarly placed. That new or independent bridges, viaducts and culverts be furnished by the company where the existing ones are of insufficient capacity. That the railway be constructed in the latest improved manner, dates be set for commencement and completion of construction. That trolley poles be of steel or iron, of neat design approved by the city and kept painted an approved color; the location of such poles to be subject, as to their location, to the Council, Superintendent of Streets or other city authority. That the company take all reasonable precautions against electrolysis of underground pipes, and make good all damage resulting therefrom. Cars should be provided with approved fenders and wheel guards, should be heated in winter to about  $65^{\circ}$  and sufficiently lighted at all times. The company should, of course, be subject to proper regulations of the Police and Health Departments, as well as to any other which would ordinarily have supervision over their structures and employees. It should keep accurate accounts which should be open to the inspection of the city authorities on demand; should safeguard the city against any damage suits due to any of its acts, and furnish a bond as security. In some cases a percentage of gross or net receipts is to be paid to the city when these exceed a certain amount. (This introduces complications when the road lies partly outside of the city unless the total receipts for the entire line be made the basis of calculation.)

### CONTAMINATION OF MAINS THROUGH LEAKS

Editor MUNICIPAL JOURNAL AND ENGINEER, New York City.

DEAR SIR:—May I ask you to kindly give me an opinion, whether in your experience it is possible for contamination of water mains to take place owing to proximity, mediate or immediate, of sewerage pipes and drains?

Would you regard the ordinary water pressure in mains sufficient in the event of capillary or moderate leakage to exclude bacterial intrusion? Yours very truly, M. S. ISEMAN.

It would be almost out of the question that any bacterial contamination should result from such proximity and any other kind would be still more impossible. The water coming out through small leaks in water mains ordinarily has considerable velocity; so much so that if there is sandy soil around the leak and the jet of water is directed against another part of the pipe, such as a nearby bell, the jet and sand have been known to act as a sand blast and eat a considerable hole into the iron. This pressure never relaxes for an instant



except when, in a case of emergency, the pressure is closed off temporarily; but this occurs very seldom. We cannot see how any matter can reach the interior of the pipe, even how bacteria can grow through a minute leak in the pipe, as they sometimes do through an earthenware filter, while this pressure is on. The only danger we can see would exist during the few minutes when the pressure might be shut off—a very infrequent occurrence.

#### STATE AID TOWARD SEWAGE DISPOSAL

*Editor MUNICIPAL JOURNAL AND ENGINEER, New York City.*

DEAR SIR:—My attention has been called to a notice in your issue of the 9th of September and also your editorial of September 16th relative to the discussion in connection with sewage disposal at Altoona, Pa., at the Convention of Cities of the Third Class. In your notice of the convention your correspondent makes no mention of a very valuable paper on sewage disposal read by Mr. G. C. Whipple, nor is there any mention of a talk given by the writer on the subject of "Sewage Disposal Problems as Affected by Recent Legislative Enactments." What the writer had to say was somewhat radical, but in his judgment, nevertheless, worthy of consideration. You are at liberty to use the paper sent herewith if you see fit.

Yours very truly, ALEXANDER POTTER.

The more important ideas advanced by Mr. Potter in his paper, and those making suggestions somewhat out of the ordinary, referred to the possibly unnecessary hardship which might be worked by the State Department of Health in calling for separate sewerage systems in every case. "It is a grave question whether this (the separation of storm and house sewage) in many cases is not absolutely unnecessary and will involve the municipalities in a great expense from which they receive no adequate benefit." "There is no system of sewage disposal adapted for general use in Pennsylvania that will effect a purification day in and day out of over 85 to 90%." This being the case, millions of bacteria must reach the river even after the sewage is purified; consequently absolute immunity from typhoid would require that the cities below should still filter the water. "If a sanitary sewer is adopted, then the foul street wash must pass directly to the river without purification. If a combined system is installed, then a disposal plant can take care both of the ordinary sewage flow and of the foul street wash after all moderate rains; while, after a heavy shower some of the sewage will pass off into the river without purification, but at a time when the river is at a maximum of flow, in which case purification by dilution is effected. With a combined sewer a greater percentage of the solids are arrested and the expense of reconstructing and paralleling existing sewers in cities already provided with a comprehensive system of combined sewers is obviated." The author calls attention to the fact that both Paris and Berlin are sewered on the combined system, the overflow of heavy storms passing directly to the rivers on which they are located.

"It is easier to filter water than to purify the sewage. Sewage disposal, unless carried to the utmost perfection and great expense incurred, cannot be depended upon to do more than abate the nuisance of discharging sewage into waterways. There is not a sewage disposal plant of any size in Europe where they pretend to accomplish more than this," although the sandy soils

of Massachusetts permit of better results. "The object of sewage disposal should be to reduce the impurities so that the relation of one of sewage, or its equivalent in purified sewage, to fifty of river flow can be always maintained."

From these assumptions and beliefs, the author concludes that in many cases where the combined system would be cheaper than the separate it should be permitted, filters being provided of a capacity for the dry weather flow and that after light storms only, with overflows to streams for the surplus of heavy storms, as is the practice in England; that all water drawn from surface streams should be purified anyhow, and that the burden added by the above plan to the water purification plants would be very much less than that which would be added to sewage purification if this were necessarily accompanied by a complete separation of house and storm sewage.

#### MUNICIPAL OWNERSHIP OF WATER WORKS

*Editor MUNICIPAL JOURNAL AND ENGINEER, New York City.*

DEAR SIR:—I am interested, both directly and indirectly, in municipal ownership of water works plants. I would be very much obliged to you if you will give me the names of several cities in the United States who own their own water works plants and which are considered to be the best of their kind in the country. Can you advise me where I can get a few articles on the subject?

Yours very truly,

R. M. MILLER, JR.

This is one of several letters received by us recently asking for information concerning, and arguments for and against, municipal ownership of water works plants. In 1900, when the United States census was taken, of the 135 cities having more than 30,000 population 88 had municipal water works, 36 private and 11 had both or joint plants. Of the 303 cities whose populations lay between 10,000 and 30,000, 143 had municipal plants, 149 private ones and ten had both or joint plants; one having no plant. In 1906, the Census Bureau reports, there were 158 cities having a population of over 30,000, and of these 117 or about 74% owned and operated water supply systems, and derived therefrom municipal revenues totaling to \$51,022,865.

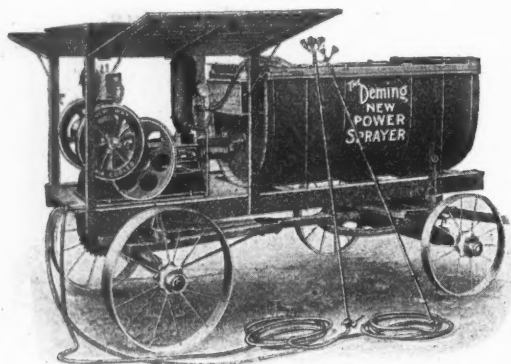
Perhaps the best designed, constructed and managed plants, among the larger cities are those of Boston, Cleveland, Rochester, Columbus, O., Reading, Pa., and Springfield, O.—all municipal plants. We know of no private plants among the same class of cities which can surpass these, if indeed any equal them, in general excellence. Our own experience leads us to believe that among the smaller cities the comparison would be more favorable to the private plants, and that as a general thing there is little difference between the general service rendered by private and municipal water works.

A collection of papers entitled "Municipal Monopolies," and edited by Prof. Edw. W. Bemis (now Superintendent of the Cleveland, O., Water Works), was published in 1899. Although this book is now nine years old, we do not recall having seen any other which contains a better discussion of the municipal ownership of water works. The subject was treated by one confessedly favoring such municipal ownership, but with a very successful attempt at giving due weight to the arguments of the other side. The price of this book is \$2.

## MUNICIPAL APPLIANCES

### Deming Spraying Outfit

THE Deming Company, Salem, O., make a spraying outfit suitable for use by park departments. The apparatus consists of a tank for mixing and storing the solution with a suitable gasoline engine and force pump. The pump and engine are mounted on the same base, and the whole apparatus is portable, as shown by the cut. All working parts of the pump are of brass to resist the chemical action of the various spraying mixtures, and the air chamber is large so as to give an even stream. The outfits are made in  $1\frac{1}{2}$ ,  $2\frac{1}{2}$  and  $3\frac{1}{2}$ -horsepower sizes.



SELF-CONTAINED SPRAYING OUTFIT

The encroachment of parasites, both fungus and insect, upon our stately city shade trees is becoming more and more of a menace each year. Past and present experiments prove beyond a doubt that there is no necessity for the great annual tree loss borne yearly by many of our larger cities. Spraying, by means of a gasoline engine attached to a powerful pump, has been fraught with the most gratifying results, and the comparatively small cost of the work is more than repaid by the great number of valuable trees saved from destruction.

### Concrete Street Paving

THE Lehigh Granolithic Street Railway Company, Allentown, Pa., have recently laid a sample of concrete street paving on Allen street, Allentown. The street was first graded and rolled with a steam roller. A Portland cement base was laid of rich concrete and tamped. The top coating, one inch thick, was laid on the base before it had set many hours. This surface coating was composed of one part of cement and two parts of ground granite of a fineness passing a quarter-inch screen. After the surface was floated it was roughened by means of a coarse reed brush. A three-quarter-inch joint was left at the curb to allow for expansion; this was filled with sand after the board used making the joint was withdrawn. One expansion joint was left crossing the street, half way between the two ends, the stretch of pavement being 160 feet. The cost of the work was \$1.60 per square yard.

### Standard Multiphase Switchboard Panels

THE Fort Wayne Electric Works, Fort Wayne, Ind., in order to meet the general requirements of central stations, operating generators of medium or small capacities, has developed a line of standard switchboard panels for use on two- or three-phase systems of either 1150 or 2300 volts. These panels are designed for generators having capacities from 10 to 300 kw., 1150 volts, and 20 to 600 kw., 2300 volts. Standard panels are recommended whenever the conditions will warrant, as they are more economical in price and better shipment can be made, as standard parts are carried in stock. These panels are designed to control separate generators and are not intended to be used in large switchboards or where several generators must be operated in multiple. All panels are made of blue Vermont marble, the face, bevel and edges of which are highly polished. These are divided into two sections, sixty-two inches and twenty-eight inches high, one and one-half inches thick, and having a  $\frac{3}{8}$ -inch bevel on all front edges. Their widths vary from twenty-four to thirty inches, according to the appliances to be mounted thereon. Metallic veins and other imperfections are carefully avoided. The panels are mounted on iron pipe frames and are furnished with necessary wall and foot braces. The standard finish of the panel bolts is black nickel plated and of the other appliances dull black, except switch blades and fuse contacts, which are polished copper. The necessity of adapting for both two-phase and three-phase service gives rise to the distinction

of two types. Type ATG (alternating current three-phase) and AQQ (alternating current two-phase). Each type is built in several forms, depending on the number and kind of instruments used. Thus three forms are possible, namely, Form 3 AV, three ammeters and one volt meter, 2 AV, two ammeters and one voltmeter, and Form AV, one ammeter and one voltmeter. Two types of instruments can be furnished, Type H, horizontal edgewise, or Type R, round pattern. Non-automatic oil switches are used in connection with Type H instruments and air break switches with Type R instruments. Oil switches are particularly recommended for use on all inductive loads.

### Simplex Concrete Piles

THE Simplex Concrete Piling Company, Tacony, Philadelphia, Pa., whose system was employed in constructing the foundations of the refuse destructor plant for the Borough of Richmond, N. Y., make their piles in the ground by driving an empty cylindrical iron form into the ground and filling the hole so formed with rich concrete as the shell is drawn up. In this way the concrete is brought into intimate contact with the soil and takes a firm hold. The concrete is never distributed after it is set. The accompanying cut, taken from a photograph made at the scene of the destructor plant, illustrates the efficiency of the Simplex pile. A load of forty-five tons of pig iron was carried by a single pile without causing it to move.

The method of planting Simplex piles is this: The driving form, a large steel tube, sixteen inches outside diameter, with  $\frac{3}{4}$ -inch thick walls and long enough to reach hard pan, is closed at the bottom end with a loose cast-iron point, which helps penetrate the soil and keep the dirt out of the tube. It is driven down to the desired depth, the tube is filled with soft concrete and then slowly pulled out of the ground, the cast-iron point remaining at the bottom of the hole and the concrete flowing through the open lower end of the tube, filling every crevice in the hole, where it is left to set without any further disturbance. Sometimes the cost of the cast-iron points can be saved by using a driving form fitted at the bottom end with a pair of hinged jaws, which close into the shape of a point while driving and open to the full extent of the pipe while pulling.

This is broadly the Simplex system, which can be adapted to any kind of soil. Sometimes reinforcing members are inserted.

The proper driving of Simplex piles is in all cases in the hands of an experienced foreman, who has had long training and thoroughly understands the requirement of good work. Little dependence is placed on formulas for determining bearing power. Generally speaking, a 3,000-pound drop hammer is used with a fall of ten feet. At least two hundred blows are given, and a final penetration of one-half inch per blow is sought.

The working load of a Simplex pile is generally taken as thirty tons. This has been justified by long experience and many test loads. There may be special cases where this loading is varied to suit the nature of the soil.

Following is a list of test loads applied to Simplex piles:

Place.	Length.	Load, tons.	Settle't.
U. S. P. O., Lawrence, Mass.....	11 ft. 3 in.	40	None
U. of Pa., Philadelphia.....	14 ft. 3 in.	70	$\frac{1}{2}$ in.
Westinghouse Mach. Co., Pittsburg..	35 ft. 0 in.	300[5 piles]	None
N. Y., N. H. & H. R. R., Boston...	28 ft. 0 in.	35	$\frac{1}{2}$ in.
Produce Exch. Bank, N. Y.....	30 ft. 0 in.	45	None
Fish Market, Baltimore.....	27 ft. 0 in.	45	None
Municipal Lodging House, N. Y....	18 ft. 8 in.	50	$\frac{3}{4}$ in.
Grand Trunk Ry., Stratford, Ont...	16 ft. 0 in.	150[3 piles]	3-32 in.
Iron City Brewery, Pittsburg, Pa....	16 ft. 9 in.	47	None



TEST OF SIMPLEX CONCRETE PILE



## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

### ROADS AND PAVEMENTS

**Road Making** and Improving Methods. Report of Committee on Practical Demonstrations of Road Construction. Use of calcium chloride, asphalt, etc. Illustrated. 4 pp., Good Roads, September.

**Improvement of Town Roads.** By Stephen Ryan, N. Y. State Road Director. 1 1-2 pp., Good Roads, September.

**English and American Roads Compared.** Explanation of inferiority of latter. 1 1-2 pp., Engineering News, Sept. 24.

**Road Dust:** Its Control and Prevention. By Wm. Pierson Judson. Illustrated. 11 pp., Engineering Digest, September.

**Dust Laying and Permanent Surfacing.** Paper before Am. Ass'n of Park Superintendents. By M. H. West. 2 1-2 pp., M. J. & E., Sept. 16.

**Oiling Sand Roads in Massachusetts.** The method and cost. 1-3 p., Engineering Record, Sept. 19.

**Sandy Roads and Furnace Slag.** Experiments of Dept. of Agriculture. 1-3 p., Engineering Record, Sept. 19.

**Tar Treatment of Road Surfaces.** By J. S. Killick. 3-4 p., Local Government Journal, Aug. 29.

**Road Tarring and Its Effect, etc.** 3 pp., The Surveyor, Sept. 18.

**Tarred Parkways of Boston.** Discussion before American Society of Civil Engineers. By John R. Rablin. 3-4 p., Progressive Age, Sept. 15.

**Road Tarring and Its Effect on Trees and Plants.** Views of several county surveyors. 11-3 pp., The Surveyor, Sept. 11.

**Tar Macadam for Streets and Main Roads.** The best method of mixing and laying. Address before Royal Sanitary Institute. By John S. Brodie. 1 p., Good Roads, September. 3-4 p., Engineering Contracting, Aug. 26.

**Tar Macadam in Rhode Island.** Discussion before American Society of Civil Engineers. By Arthur H. Blanchard. 2 1-3 pp., Progressive Age, Sept. 15.

**Tar Concrete Paving at Laurelton, L. I.** Method of construction. Illustrated. 3-4 p., Engineering Contracting, Sept. 16.

**Repairing Macadam Roads.** By scarifying and rolling instead of by patching. Method and Cost. By E. A. Hackett, County Surveyor, County Tipperary. 4 pp., Engineering Contracting, Sept. 2.

**Maintenance of Macadam and Other Roads.** Discussion before American Society of Civil Engineers. By I. O. Baker. 17 pp., Proceedings of the Society, September.

**Motors on Macadam Roads, the Effect of.** Paper before Buffalo Good Roads Convention. By Logan W. Page, Director U. S. Office of Public Roads. 1 1-2 pp., The Surveyor, Sept. 4. 1 p., Engineering Record, Sept. 26.

**Concrete Road for Automobiles, A Nine-Mile.** The Long Island Motor Parkway. Description of location, construction, etc. Illustrated. 12-3 pp., Engineering Record, Sept. 26. 11-4 pp., Cement Age, September.

**Concrete Street Paving in Allentown, Pa.** Method of laying a sample stretch. Illustrated. 4 1-2 pp., Concrete Review, Sept. 1.

**Brick Street Paving in Columbus, O.** Minute details of cost in 1908. 2 1-2 pp., Municipal Engineering, September.

**Repairing Asphalt Pavements in Utica, N. Y., The Cost of Figures for Twenty Years.** 1-2 p., Engineering Record, Aug. 29.

**Municipal Asphalt Plant, Pittsburg's.** Description of plant and work done. Illustrated. 13-4 pp., M. J. & E., Sept. 2.

**Winnipeg Municipal Asphalt Plant.** Cost of Work. 1-4 p., M. J. & E., Sept. 23.

**Asphalt Plant of Toronto, Ont.** General description. 1-2 p., Engineering Contracting, Sept. 16.

**Street Pavements in Oakland, Cal.** Various kinds. 1-4 p., M. J. & E., Sept. 2.

**Business Streets in Small Cities.** Necessity for improved pavements. 1-3 p., M. J. & E., Sept. 16.

**Pavement Notes.** Pennsylvania cities. Illustrated. 1-2 p., M. J. & E., Sept. 2.

**Bridges and Culverts, Reinforced Concrete Highway.** General considerations and details of construction. By J. A. Nortland. Illustrated. 3 pp., Good Roads, September.

**Concrete Highway Culvert, Cost of Constructing.** Span, 6 feet; length, 12 feet. 1-4 p., Engineering Contracting, Aug. 26.

### SEWERAGE AND SANITATION

**Sewerage System of San Antonio.** Popular description. By Geo. W. James. 11-4 pp., The Arena, September.

**Omaha's Sewerage System.** General description. By Andrew Rosewater, City Engineer. 2 1-2 pp., City Hall, September.

**Sewerage and Sewage Disposal.** By H. C. H. Shenton. Local Government Journal, Sept. 5-12-10-26.

**Sewage Disposal Works at Burslem.** By F. Bettany, Borough Engineer. Illustrated. 3 pp., The Surveyor, Sept. 4. Illustrated. 4 pp., Contract Journal, Sept. 2.

**Gosport Sewage Disposal Works and Refuse Destructor.** Illustrated. 6 pp., Contract Journal, Aug. 26.

**Irrigating with Septic Sewage.** Plant at Fresno, Cal., briefly described. 1-4 p., M. J. & E., Sept. 23.

**Agricultural Use of Sewage at Edwardsfelde.** Review of book by this name, by A. Wulsch. 3 pp., Gesundheits-Ingenieur, Aug. 29.

**Septic Tank Experience at Stratford-on-Avon, England.** 1-4 p., Engineering Record, Sept. 12.

**Report of Royal Commission on Sewage Disposal.** Synopsis of Fifth Report of British Commission. 2 pp., Engineering Record, Sept. 26. 1 p., Municipal Journal, Sept. 11. 1 1-2 pp., Local Government Journal, Sept. 12. 2 3-4 pp., The Surveyor, Sept. 11.

**Modern Methods of Sewage Purification.** Condensed from Ohio Sanitary Bulletin. By A. Elliott Kimberly. 4 1-2 pp., Engineering Digest, September.

**Elimination of Suspended Matters in Sewage.** Summary of discussion before Royal Sanitary Institute. 2 pp., Engineering Record, Sept. 5.

**Biolysis of Sewage, Some Recent Experiments on.** Paper before Royal Sanitary Institute. By W. D. Scott-Moncrieff. With discussion. 2 pp., The Surveyor, Aug. 21.

**State Aid in Sewage Disposal.** Proposed for Pennsylvania. 1-4 p., M. J. & E., Sept. 16.

**Typhoid Bacillus, Vitality of the, in Raw River Water.** Result of research by Dr. A. C. Houston in London. 1 1-4 pp., Water, Sept. 15.

**Bacillus Tubercle, A Rapid Method for the Detection of.** By Herman Dold. 2 1-2 pp., Journal, Royal Institute of Public Health, September.

**Intercepting Traps, Are They Necessary? Arguments against their use.** By E. B. B. Newton. 6 1-2 pp., Journal, Royal Institute of Public Health, September. 13-4 pp., The Surveyor, Sept. 18.

**Excavating Trenches in Quicksand by Bleeding Method.** Illustrated. 3-4 p., Engineering Contracting, Sept. 2.

**Sewer Trenching in Wet Sand. Underdraining by driven wells.** By C. M. Ripley. Illustrated. 4 1-2 pp., Municipal Engineering, September.

**Pressure of Earth Filling on Bracing in Trenches.** Mathematical solution from Transactions American Society of Civil Engineers. By Milo R. Ketchum. Illustrated. 12-3 pp., Engineering Contracting, Aug. 26.

**Cost of Sewers in Holyoke.** Reinforced concrete and vitrified pipe. 1-4 p., M. J. & E., Sept. 2.

**Cost of Sewer Trenching on a Small Job.** 1-4 p., Engineering Contracting, Sept. 16.

**Cost of Constructing Sewers and Manholes at Oskaloosa, Ia.** 1 p., Engineering Contracting, Sept. 23.

**Brick Sewer at Gary, Indiana, Cost of a Large.** 3-4 p., Engineering Record, Aug. 27.

**Concrete Sewers at Decatur, O.** Construction and cost. 1 p., M. J. & E., Sept. 2.

**Concrete Sewer Construction.** Construction of segmental sewers. Illustrated. 1 1-2 pp., Cement, August. Illustrated. 1 1-2 pp., Engineering Contracting, Sept. 2.

**Making Y and T Joints from Straight Concrete Sewer Pipe.** Detailed explanation. 3-4 p., Concrete, September.

**Steel Forms for an Eight-Foot Concrete Sewer, Method and Cost of Moving.** Illustrated. 1 p., Engineering Contracting, Sept. 2.

**Vitrified Clay Sewer Pipe, Superiority of.** Extracts from a Trade Pamphlet. Illustrated. 3 pp., The Clay Worker, September.

**Sewer Cleaning in Buffalo.** Description of machine used for this purpose. 1-2 p., Engineering Record, Sept. 19.

**Choked Sewers in Dayton. Cause and cleaning.** 1-2 p., M. J. & E., Sept. 23.

**Pumping Stations of the Intercepting Sewer Systems of Chicago.** Technical description of machinery. Illustrated. 4 1-2 pp., Engineering News, Sept. 10.

Pumping Station Conduits and Out-fall Sewer of the Washington Sewerage System. Full technical description. Illustrated. 3 pp., Engineering Record, Aug. 29.

Baltimore's Sewage Pumps. General description of 27,500,000-gallon pumps. 2 pp., City Hall, September.

**Health Measures**, Application of. Report of Chief of Division of Hygiene of Brussels. By M. J. Wilmar. 12 1-2 pp., La Technique Sanitaire, September.

**Typhoid**, Deaths from, in 1907, in 42 largest U. S. cities. 1-4 p., M. J. & E., Sept. 16.

## WATER SUPPLY

**Water Works** of Newark, N. J. Brief description. Illustrated. 2 pp., Fire and Water, Sept. 23.

Atlantic City Water Works, A Brief Description of. Illustrated. 13-4 pp., Fire and Water, Sept. 23.

Reading (Pa.) Water Works System. General description. Illustrated. 13-4 pp., Fire and Water, Sept. 9.

Water Supply at Pittsburg. Pumps, system, etc. By H. G. Manning. Illustrated. 13-4 pp., Iron Age, Sept. 3.

Cincinnati's Water Plant. Popular description. Illustrated. 11-2 pp., Cement World, September.

Public and Private Water Supplies of Indianapolis. By Eugene Buchler. 11-2 pp., Municipal Engineering, September.

Water Supply of Los Angeles. Popular description. Illustrated. 21-2 pp., Fire and Water, Sept. 9.

Seattle Power Plant and Water Supply. Abstract of paper before Pacific Northwest Society of Engineers. By Jay L. Stannard. Illustrated. 3 pp., M. J. & E., Sept. 9.

Water Supply of Harrogate. Report on water work, including Candy Filters. By Prof. Wm. R. Smith. 41-2 pp., Journal, Royal Institute of Public Health, September.

**Underground Water** Supplies from a Sanitary Point of View. Presidential address before Institute of Sanitary Engineers. By Baldwin Latham. 33-4 pp., Water, Sept. 15.

Underground Water Supply of Indiana. Paper before Indiana Water and Public Health Association. By Fred'k G. Clapp. 11-2 pp., Water and Gas Review, September.

Ground Water Supply for Brooklyn. Description of plan proposed for obtaining supply from Suffolk County. By Wm. Fyfe Turnbull. Illustrated. 23-4 pp., M. J. & E., Sept. 23.

**Hydrological Investigations** for the Third Water Works for Leipzig. Translation of article by A. and T. G. Theim. Illustrated. 3-4 p., Engineering Record, Sept. 26.

**Water Analysis**, Methods of. Paper before Indiana Sanitary and Water Supply Association. By J. H. Brewster, Assistant Chemist, State Board of Health. 31-2 pp., Municipal Engineering, September.

**Clarification** of the Water Supply of Nashville, Tenn. Sedimentation assisted by a coagulant. 1-2 p., Engineering Record, Sept. 12.

Effect of Storage on the Vitality of the Typhoid Bacillus in the London Water Supply. Result of laboratory test. By Dr. A. C. Houston. 1-2 p., Engineering News, Sept. 3. 11-4 pp., Engineering Record, Sept. 19.

**Roughing Filters** of the Derwent Valley Water Board, England. Description of the Puech system under construction. Illustrated. 3-4 p., Engineering News, Aug. 27.

**Mechanical Filter** Manufacturing Companies, The Relation of the Engi-

neer to. Paper before Central States Water Works Association. By B. F. Leopold. 2-3 p., Engineering News, Sept. 24.

**Filtration Plant**, Pittsburg. Semi-technical description. By H. M. Leh and E. A. Foster. Illustrated. 4 pp., Cement Age, September.

Double Filters at South Norwalk, Conn. 1-3 p., M. J. & E., Sept. 30.

Filtered and Softened Water Costs More than Raw in Columbus, O. 1-4 p., M. J. & E., Sept. 23.

**Manganese**, Removing from Drinking Water. By the use of aluminum silicate. By Dr. H. Noll. 61-2 pp., Gesundheits-Ingenieur, Aug. 22.

**Record Gauges** in a Filtration Plant, The Use of, at Harrisburg. By F. B. Leopold. Illustrated. 11-2 pp., Engineering Record, Sept. 19. Illustrated. 21-2 pp., Fire and Water, Sept. 23.

**Pipe Line** Water Distribution System 160 Miles Long. For the El Paso and Southwestern Railway. 41-2 pp., Engineering News, Aug. 27.

Water Works Conduit at Salt Lake City, Utah, The Big Cottonwood. Description and method of construction. 11 pp., Municipal Engineering, September.

Repairing a 72-inch Steel Main Under 30 Feet of Water. Paper before American Water Works Association. By A. W. Cuddeback. Illustrated. 2 pp., Engineering Contracting, Sept. 23.

Large Water Works Siphon. Paper before American Water Works Association. By Howard A. Dill. 1 p., Water and Gas Review, September.

Spacing Bands on Wood Stave Pipe. Diagrams for calculating. Illustrated. 3-4 p., Engineering News, Sept. 3.

**Cleaning Water Mains** in Pittsburg. Results of. Paper before Central States Water Works Association. By C. O. Daughaday. 2-3 p., Engineering Record, Sept. 26.

**Flow of Water** in Spiral Riveted and Other Pipes. Results of a series of experiments. By E. W. Schroder and H. A. Gehring. Illustrated. 11-2 pp., Engineering Record, Aug. 29.

Curve Resistance in Water Pipes. Discussion before American Society of Civil Engineers. By G. J. Davis. Illustrated. 17 pp., Proceedings of the Society, September.

**Pumping Stations**, Fuel Oil. Operating Results at the Wentham and Wareham. Details of tests. Illustrated. 1 p., Engineering Record, Aug. 29.

**Inspection**, Water Shed. Result of efforts of New York State Department of Health. 1-3 p., M. J. & E., Sept. 30.

**Location** of the Catskill Aqueduct, Peekskill Division. Stadia surveys for this purpose. Details of methods and apparatus. Illustrated. 13-4 pp., Engineering News, Sept. 3.

**Water Meters** at Minneapolis. Number used and results. 1-4 p., M. J. & E., Sept. 16.

Columbus Water Works Notes. Meters, present value of plant, etc. 1-3 p., M. J. & E., Sept. 9.

**Free Water** by Municipal Plants. Statistics from East Orange and Kansas City. 1-3 p., M. J. & E., July 16.

**Service Pipes**, Ownership of. Who owns and who pays for them in thirty cities. 3-4 p., M. J. & E., Sept. 23.

**State Control** of Public Water Supplies. Paper before American Public Health Association. By Dr. Chas. O. Probst, Secretary Ohio State Board of Health. 21-2 pp., Municipal Engineering, September.

**Salt Water** and Oil in a Public Water Supply. Paper before Indiana Water and Public Health Association. By

Quince Walling. 1 p., Water and Gas Review, September.

**Currents** in Lake Michigan. Paper before Lake Michigan Water Commission. By Major W. V. Judson. 11-4 pp., Engineering Record, Sept. 26.

**Dam**, Temperature of a Masonry. Observations made of interior temperatures of the Boonton dam. 11-2 pp., Engineering Record, Sept. 5.

Cost of Reinforced Concrete Dam. Reclamation Service Corbett Diversion Dam. 3-4 p., M. J. & E., Sept. 2.

## STREET LIGHTING AND ELECTRIC POWER

**Lighting** a Metropolis. General article. By Edw. G. Cowdery. 1 p., Light, August.

Street Lighting in Brooklyn. By H. Thurston Owens. Illustrated. 2 pp., Progressive Age, Sept. 1.

Street Lighting Fixtures, Some New York Examples. By H. Thurston Owens. Illustrated. 21-2 pp., Illuminating Engineer, August.

**Municipal Lighting**, Causes of Failure in. Paper before Ohio Electric Light Association. By D. L. Gaskell. 21-4 pp., Water and Gas Review, September; 23-4 pp., Public Service, September.

**Municipal Hydro-Electric Plant** at Waipori, N. Z. Description, finances, etc. 1 p., Contract Journal, Sept. 9.

Municipal Hydro-Electric Plant at Spooner, Wis. General technical description. Illustrated. 1 p., Engineering Record, Aug. 29.

**Tungsten Lamp**, a Twelve Months' Achievement of the. By S. E. Doane, Chief Engineer National Electric Lamp Association. 11-4 pp., Electrical Review, Sept. 12.

Tungsten Lamp Economy. Technical discussion. By Francis W. Wilcox. Illustrated. 43-4 pp., Electrical Review, Sept. 12.

Street Lighting Contracts and the Tungsten Lamp. Editorial concerning. 2-3 p., Electrical Review, Sept. 9.

**Electric Meter** Testing and Repairing. By New York Edison Co. Illustrated. 1-3 p., Municipal Journal and Engineer, Sept. 2.

Testing Service Meters (Electric), The Test-Meter Method of. Illustrated. 31-3 pp., Electrical Review, Sept. 5.

**Subway Manholes**. New design for electric conduits at Auburn, N. Y. Illustrated. 3-4 p., Municipal Journal and Engineer, Sept. 16.

Cost of Constructing Seventy-four Brick Vaults for Underground Conduit. Detailed costs in full. Illustrated. 13-4 pp., Engineering Contracting, Sept. 23.

**Gas Supply** in England. Review of ten years' operation of municipal and private plants. 1 p., Municipal Journal and Engineer, Sept. 11.

## FIRE AND POLICE

**Fire Departments** and Underwriters, Cooperation Between. Paper before International Association of Fire Engineers. By Fillmore Tyson. 2 pp., Municipal Journal and Engineer, Sept. 2; 3 pp., Fireman's Herald, Sept. 26; 2 pp., Fire and Water, Sept. 9.

Reorganization of Fire Departments from Volunteer to Paid. Paper before International Association of Fire Engineers. By Fred Morrison. 1 p., Fire and Water, Sept. 16.

**Fire Prevention**. Paper before National Firemen's Association. By Chief J. R. Canterbury. 1 p., Fireman's Herald, Sept. 12; 2-3 p., Fire and Water, Sept. 2.



Fireproof School Building, The Modern. Paper before International Association of Fire Engineers. By Thos. K. Harding. 1-2 p., Fire and Water, Sept. 16.

Gasoline, Handling and Storage of. Paper before International Association of Fire Engineers. By J. A. Archibald. 1-2 p., Fire and Water, Sept. 16.

Fire Protection, Cost of. Request of U. S. Geological Survey for data of water works plants. 3-4 p., Municipal Journal and Engineer, Sept. 23.

Fire Appliances in Dublin. Need of improvements. 1 p., Consular and Trade Reports, Sept. 17.

Fire Hose Life and Standard Couplings. 1-2 p., Municipal Journal and Engineer, Sept. 30.

High-Pressure Water Supply System. Test of New York's fire protection system. Illustrated. 1 p., Municipal Journal and Engineer, Sept. 2.

Signal Systems, Pittsburg. Police box with handcuff attachment. 1-4 p., Municipal Journal and Engineer, Sept. 16.

## GOVERNMENT AND FINANCE

Initiative and Referendum in Practical Operation. By Geo. H. Shibley. 8 pp., The Arena, September.

Municipal Ownership in Germany. Extent of. 1-4 p., Municipal Journal and Engineer, Sept. 23.

Brooklyn, Ill., a Town Governed Solely by Negroes. By Iverson B. Summers. Illustrated. 6 pp., The Independent, Aug. 27.

Woman's Suffrage, A Woman's Argument Against. By Virginia B. Le Roy. 5 pp., Suffragists and Suffragettes. By Winnifred H. Cooley. Illustrated. 6 pp., The World To-day, October.

Statistics of Cities. Abstract of Report of Census Bureau. Cost of government in detail, of municipal enterprises, city debts and taxes. 13-4 pp., Municipal Journal and Engineer, Sept. 30.

Assets of the United States. Including municipal, State and Federal property. Exact figures. By L. G. Powers, of the U. S. Census Bureau. 10 pp., American Journal of Sociology, September.

Valuation of Property of Public Service Corporations. Abstract of paper before Wisconsin Gas Association. By Henry L. Dougherty. 1 p., Engineering Record, September 5.

## MUNICIPAL—807—October 1

Physical Valuation of Public Utilities. Reasons for its general adoption. By Prof. John R. Commons. 3-2 pp., The Independent, Sept. 10.

Bond Sales during July, Municipal. With financial statistics of cities. 1-2 pp., Municipal Journal and Engineer, Sept. 2.

## STREET CLEANING

### AND REFUSE DISPOSAL

Machine Brooms, Refilling. By Pittsburg Street Dept. Illustrated. 1-4 p., Municipal Journal and Engineer, Sept. 2.

Garbage Disposal at McKeesport. Details of collection and disposal plant. Illustrated. 3-4 p., Municipal Journal and Engineer, Sept. 16.

Garbage Disposal at Cleveland. Abstract of paper before Civil Engineers' Club of Cleveland. By W. J. Springborn. 1 p., Municipal Journal and Engineer, Sept. 23.

Refuse Destructor, Richmond Borough. Description of plant and of tests made of same. Illustrated. 5-2

pp., Municipal Journal and Engineer, Sept. 30.

New Brighton's Garbage Plant. Editorial on recent report. 1-2 p., Municipal Journal and Engineer, Sept. 30.

## TRAFFIC AND TRANSPORTATION

Municipal Street Railways Abroad. Consular reports from Manchester, Belfast and Huddersfield, Great Britain. 1-2 p., Municipal Journal and Engineer, Sept. 23.

San Francisco, Street Railway System of. Technical description of plant, etc. Illustrated. 8-4 pp., Electric Railway Journal, Sept. 5.

England, Motor Busses in. Ultimate cost and details of use. 3 pp., Consular and Trade Reports, Sept. 21.

London, Tramways for. Proposed new. Necessity for and routes. 1 p., Contract Journal, Sept. 9.

Three-cent Traction Service. A study of conditions in Cleveland. By Wm. H. Hodge. 9 pp., Public Service, September.

Pay-within Cars in Philadelphia. A new style of prepayment cars. Illustrated. 23-4 pp., Electric Railway Journal, Sept. 26.

Fender and Wheel Guard Tests by New York Public Service Commission. Description of first day's test. Illustrated. 3 pp., Electric Railway Journal, Sept. 19.

## MISCELLANEOUS

Bureau of Statistical Information at Newark. Statement of work done. Illustrated. 2 pp., City Hall, September.

Department of Legislative Reference of Baltimore. Its organization and work. By Horace E. Flack. 2-2 pp., Municipal Engineering, September.

Public Works of Hamilton, Ontario. Suction dredge for cleaning reservoir, street cleaning, etc. Illustrated. 2 pp., Municipal Journal and Engineer, Sept. 9.

Atlantic City Improvements. Paving, sewerage, garbage disposal, etc. Illustrated. 2-4 pp., Municipal Journal and Engineer, Sept. 2.

Reclaiming Newark Meadows. Abstract of report by special committee. Illustrated. 23-4 pp., Municipal Journal and Engineer, Sept. 16.

Beautifying of Cities. Brief discussion. 1 p., Revista Municipal, Sept. 15.

Parks, London. General statement, profusely illustrated. 13-4 pp., Contract Journal, Sept. 9.

Housing and Town Planning Bill. Paper before Sanitary Ass'n of Scotland. By F. G. Holmes. 2 pp., The Surveyor, Sept. 18.

Tree Planting in Streets, English Methods of. 3-4 p., Engineering-Contracting, Sept. 16.

Tree Guards, Ornamental and Otherwise. Illustrated Description of American and European Guards. 1 p., Suburban Life, October.

City Congestion, The Remedy for. By N. O. Nelson. 3-2 pp., The Independent, Sept. 24.

Charitable and Correctional Institutions, The Minnesota System in the Management of. By Prof. Sam'l G. Smith. 6 pp., American Journal of Sociology, September.

Baths at Douglas, England, Salt Water. General description. Illustrated. 2 pp., Municipal Journal, Aug. 21.

Bath House of Concrete, Albany Municipal. Illustrated. 1 p., Cement Age, September.

Smokeless Combustion. Abstract of report by U. S. Geological Survey on recent investigations. Various city or-

dinances. 2 pp., Municipal Journal and Engineer, Sept. 9.

Smokeless Boiler Settings at Chicago. Result of tests on public school plants. Illustrated. 1-2 p., Engineering News, Sept. 3.

Contracting Engineer, The. Popular statement of work he does. By Benj. Brooks. Illustrated 10 pp., Scribners, September.

Municipal Engineer, The Second Year of the Embryo. 1 p., Contract Journal, Sept. 2.

Salaries of Ohio City Engineers. 1-4 p., Municipal Journal and Engineer, Sept. 9.

Sand in Concrete Construction, The Importance of. Paper before National Cement Users' Association. By E. S. Leonard. 1-2 pp., Engineering-Contracting, Sept. 9.

Sands, Their Relation to Mortar and Concrete. Paper before Am. Soc. for Testing Materials. By Henry S. Spackman and Robert W. Leslie. 3-2 pp., Engineering-Contracting, Sept. 2.

Corrosion of Iron from the Electrochemical standpoint. Presidential address before the Am. Electrochemical Society. By C. F. Burgess. 33-4 pp., Electrical Review, Sept. 12. 2-2 pp., Electrical Review, Sept. 19.

Bridge, Bascule, at Syracuse. A remarkable technical description. Illustrated. 3-4 pp., Engineering News, Sept. 24.

Duluth Aerial Ferry Bridge. General description. By O. G. Olson, President, Board of Public Works. Illustrated. 2 pp., City Hall, September.

Cables for the New Manhattan Bridge. Description of machinery and methods of assembling. Illustrated. 2-2 pp., Iron Age, Sept. 17.

## BOOK REVIEWS

**The Building Mechanic's Ready Reference.** Cement Workers and Plasterers' Edition. By H. G. Richey. New York: John Wiley & Sons, 1908. Flexible leather, 4x7 inches, 458 pp. Price \$1.50. The author, who is Superintendent of Construction United States Public Buildings, has prepared this book to supply the deficiency in literature available for the use of the ordinary mechanic or worker in cement and concrete. A large amount of the information contained is presented in tabular form. The characteristics of cement are first discussed, then its use in concrete and mortar. A section is devoted to concrete sidewalk construction, and another to building blocks. Plastering in all its methods of application is given a section. Over a hundred pages in the concluding chapter contain miscellaneous information, rules, suggestions, receipts and tables of measurements.

**Reinforced Concrete.** A Manual of Practice. By Ernest McCullough. Chicago: Cement Era Publishing Co., 1908. Cloth, 5x8 inches, 128 pp. Price \$1. The author, in writing this book for practical men wishing to know the theory of the design of reinforced concrete, has confined himself to the requirements of the ordinary conservative building ordinances of American cities. The author's style is clear and within the comprehension of any man competent to take charge of reinforced concrete construction. The author treats his subject under the following heads: Strength of Beams, Loads on Beams, Columns, Walls, Tanks and Footings, Design and Cost, Forms, the Conduct of Work, Tools.

**Road Preservation and Dust Prevention.**

By William Pierson Judson. New York: The Engineering News Publishing Company, 1908. Cloth, 6x9 inches, 197 pp., 69 illustrations. Price \$2. The author, a practical road builder and engineer has written this book in a style, brief and clear, similar to that of his well-known book on City Roads and Pavements. The book is the first effort to bring up to date in a single volume the methods of construction and treatment of macadam roads that have been developed mostly during the past few years, to combat new conditions, the disintegration of roads through the action of automobiles. The first chapters deal with the dust problem, methods of treating roads to allay the nuisance, the process also having a tendency, of course, to preserve the road. The effect of water alone, and substances soluble in water, such as calcium chloride, akonia and lymanite, which keep the road in a moist condition, are given a chapter. Oil emulsions of many kinds, and still more proprietary names, come in for favorable comment, within their limited sphere of action. The experience of road builders in many States with petroleum, crude or prepared, gives good results where the oils are asphaltic and negative results where attempts have been made to use petroleum of a paraffin base. This class of work varies in its nature from the mere sprinkling of oil from a can by hand, to work that on account of the labor of spreading and mixing with the soil of the roadway, as in the laying of petrolithic, may be considered a permanent paving. Coal tar preparations applied superficially or by mixture are given three chapters with references to French, German, and more especially English practice, where the system has been employed extensively and successfully. The Gladwell system, which consists of two fine layers of fine mixed screenings, with an intermediate layer of coarse dry stone, receives favorable comment. Tar has been used considerably and successfully during the last two years in this country, but we seem to be far behind the English in the use of mechanical appliances to facilitate and cheapen the work. The surface application of tar is to be compared with the surface application of asphaltic oils. But the more elaborate systems like the Gladwell approach in value permanent roadways, such as rock, asphalt, macadam and bitulithic, which are described in the last two chapters. Considering the cost and durability of bitulithic, it seems a little strange that it should be included at all in a book having the title of "Road Preservation and Dust Prevention." The class of work discussed is in an early stage of development, and a single year may bring many changes in methods of treatment.

**Hendricks' Commercial Register of the United States for Buyers and Sellers.**

New York: Samuel E. Hendricks Co. Cloth, 7½x10 inches, 1,240 pp. Price, \$10. The seventeenth annual 1908 edition of this well-known reference book of commercial houses is still larger than its predecessors, the index of the present edition requiring 82 pages, as compared with 76 last year. As each page contains 412 classifications, the six additional pages contain 2,472 additional trade classifications, making for the eighty-two pages a grand total of 33,684 headings, each one of which represents the manufacturers, etc., of some machine, tool, apparatus, specialty or material.

**NEWS OF THE SOCIETIES****Mayors' Association of the State of Illinois.**

The third annual convention of the Association was held at La Salle September 24 and 25 with representatives of thirty or forty of the principal cities of the State present. The principal topics considered were the changes desired in the assessment and tax laws and support of the Lakes to the Gulf Waterways Project. The convention was called to order at the La Salle Opera House by President Silas Cook, Mayor of East St. Louis. Mayor Pannech of La Salle delivered the address of welcome, and Mayor McDonald of Decatur responded. Mayor Cook at a later session advocated reform in the laws regulating the debt limit, which owing to low assessments of property, placed that limit at only one per cent of a fair cash value. This compels cities-at-large to pay a share of public improvements out of the annual tax. Mayor McDonough advocated legislative authority for bonding self-sustaining public utilities. City Statistician Hugh Grosser of Chicago presented statistics to show that unless the bonding power of the cities is increased it will be necessary for Illinois cities to resort to the plan of levying license taxes on all sorts of business enterprises. Lieutenant Blow, who has been connected with river and harbor work, spoke of the advantages to municipalities of the proposed system of canals from Chicago to the Gulf. Among the social features of the meeting were a trolley ride and dinner at Starved Rock. Visits were made to the plans of the Owl Cement Company, the Matthiessen-Hegeler Zinc Works and the Nickeloid Plating Company. The city of Elgin was chosen for the 1909 meeting of the Association. Officers elected for the coming year were: Mayor McDonald, Decatur, President; Mayor Pannech, La Salle, Vice-President; ex-Mayor McCaskrim, Rock Island, Secretary; ex-Mayor Beaver, Mt. Carroll, Treasurer.

Following these elections, the "Finances of Our Cities" was taken up by the Hon. Walter H. Wilson, Comptroller of Chicago; Mayor George Shumway, of Galesburg, and Mr. W. E. Barge, Assistant Corporation Counsel, Chicago. Mr. Wilson called attention to the need of a change in the law which would increase the bonding limit. This would not necessitate such large yearly levies of taxes. Furthermore, bonds should be allowed to be issued for municipally owned public utilities. Where any bonds are for long term there should be provided a sinking fund, towards which money should be deposited each year during the life of the bonds.

Mr. Barge spoke on the question of serial bonds versus long time bonds, and showed the advantages in favor of the serial bond. He cited the instance of Chicago, which since 1903 has been issuing serial bonds for improvements. The use of serial bonds does away with the need of a sinking fund, and consequently saves money to the taxpayer. He also stated that the law applying to the sinking fund should be amended so that this sinking fund can be used for the repurchase of the bonds at any time an opportunity offered. He called attention to the fact that the present 2 per cent limit is not sufficient to meet the expenses of the various departments and keep up the necessary repairs of streets, etc.

Mayor Shumway emphasized the need of organization and co-operation among the mayors of the State to secure from the Legislature the necessary relief by a

change in the present tax law. He also advocated a four-year term of office for all city, State and Government officers who now serve two years. He also suggested that the Aldermen of cities be paid an adequate salary or else nothing at all.

**Central States Water Works Association.**

The following officers were elected at the recent meeting at Pittsburgh, Pa.: President, Wm. Schwetfeger, City Water Board, Wheeling, W. Va.; Vice-President, T. H. Verner, Water Department, McKeesport, Pa.; Secretary, Wm. Allen Veach, Newark, Ohio; Treasurer, A. W. Inman, Massillon, Ohio. State Vice-Presidents—F. W. Brinkoetter, Quincy, Ill.; C. L. Rawlings, Hartford City, Ind.; Asa Williams, Owensboro, Ky.; Alba L. Holmes, Grand Rapids, Mich.; L. M. Latta, Akron, Ohio; C. F. Drake, Pittsburg, Pa.; J. Ahearn, Nashville, Tenn.; W. J. Scroggins, Wheeling, W. Va.; Fred Bosch, Whitewater, Wis. Executive Committee—F. B. Leopold, Pittsburg, Pa.; C. W. Wiles, Delaware, Ohio; Jerry O'Shaughnessy, Columbus, Ohio. Finance Committee—Geo. F. Copper, Xenia, Ohio; Wilbur Schofield, Benwood, W. Va.; J. Langan, Tipton, Ind.

The next convention meets in Columbus, Ohio, in 1909.

**League of Iowa Municipalities.**

Members of the League met in annual convention at Ottumwa, September 16. Mayor T. J. Phillips delivered the address of welcome, to which a response was made by T. B. Ingalls, Maquoketa, who presided in the absence of President MacRae. Prof. Thomas M. McBride delivered an address on "Outdoor Art." D. A. Shields spoke on municipal accounting. Addresses were also made by Dr. B. L. Eiker on sanitation, and A. E. Kepford, the latter speaking of tuberculosis. C. G. Saunders of Council Bluffs, who was to have delivered an address on "Terminal Taxation of Railroads," sent his apologies for not having prepared his paper, having made a mistake as to the date of the convention. He was requested to forward his paper later that it might be printed in the proceedings. Among the resolutions regarding desired legislation, was one to the effect that the statute providing for State examination of municipal accounts be repealed. A paper on water rates was read by F. H. Munger of Waverly. John MacVicar of Des Moines, in speaking of suggested changes of State law, strongly upheld the Des Moines city administration. A special meeting of City Clerks and Auditors was held for the purpose of taking up the matter of an auxiliary organization of the city accounting officers of the League. Charles Deeds was chosen chairman, A. D. Sheets of Des Moines, Secretary.

A Committee on Sewerage, Dr. F. W. Daubney, Decorah, Chairman, discussed sewage disposal. The need of purification work for Iowa cities was recognized and the use of septic tanks was considered as the remedy.

The following officers were elected: Mayor Thomas J. Phillips, Ottumwa, Ia., President; P. R. Ingalls, Maquoketa, Vice-President; F. B. Pierce, Marshalltown, Secretary; J. W. Walters, McGregor, Trustee. The next annual convention will be held at Cedar Rapids.

**National Association of Railway Commissioners.**

The twentieth annual convention of the Association will be held at Washington, D. C., October 6. The membership of the association includes the Interstate Commerce Commissioners or Deputy Commissioners of the several States and Territories, and in those States and Territories those State officers having no railway commissions, those State officers who exercise active supervisory powers over the affairs of railways, also the Secretary and Chief Clerk of the Interstate Commerce



Commission, and of each Interstate Commerce Commission, and of each State Commerce Commission. Among the committees appointed at the last meeting were the Committees of the Construction and Operating expenses of electric railways, James S. Harlan, of the Interstate Commerce Commission; Grade Crossings, Union B. Hunt, of Indiana; Railroad Taxes and plans for ascertaining fair valuation of railroad property, William D. Nesbit, of Alabama; Amendment of act to Regulate commerce.

**American Public Works Association.**—With representatives present from many States, the association held its third biennial convention at Asheville, N. C., September 29. The convention had for its purpose the betterment of conditions surrounding tendering of bids and the construction of public works of every character. The subject of uniform specifications came in for considerable discussion. Papers were read on numerous features of public works construction, among them being "Time Limits to Contracts," by George A. King, of George A. & W. B. King, Washington; "Master and Servant," by Mr. Joseph S. Slicer, Atlanta; "The Business of Contracting," by Mr. Richard H. Edmonds, Baltimore, and "Systematizing Contractors' Office," by Frank B. Gilbreth, New York City. Several of the rules which the association has framed for cities and others to work under for a fair and equitable deal to parties were changed. The changes were only made from practical experience, and as now standing represent the best methods under which cities and contractors can work together for mutual benefit and the promotion of all public work on the most equitable basis. It is probable that a uniform contract blank will be adopted which will embody the features desired in contracting work. There are many things connected with the making of contracts that are not all satisfactory to contractors generally, and it is felt that the use of this uniform contract, representing the best ideas of the members of the American Public Works Association, will protect all interests and at the same time overcome the many objectionable features in contract forms now existing. The American Public Works Association is composed of those men—engineers, architects, contractors and material and supply men—who engage in municipal and State work. Its efforts are directed toward securing fair and impartial conditions surrounding the preparation of plans, bidding on public work, the awarding of contracts and the inspection of work while in course of construction. While in some cities the methods followed are all that could be desired, in others, and many of them, too, the conditions under which contracts are let are far from what they should be. President R. C. Huston, in his address, explained the aims of the association as stated above, and since that he believed, that in order to keep the quota of membership at the top notch and to enlist among their members the best men in their respective lines, it would be necessary to give a wider publicity to their work and the results accomplished. President Huston also recommended the employment of a salaried secretary, whose duties would be to keep in touch with all municipalities, supplying such of them as contemplate work with copies of the association's rules and endeavor to have all contracts awarded in strict accordance with them; to

notify all members of contracts to be awarded under these rules, and to be present at the awarding of contracts to see that the rules are complied with and that justice is done the bidders.

**Illuminating Engineering Society.**—At the second annual convention of the society, held in the auditorium of the Hotel Walton, Philadelphia, Pa., the following technical papers were read:

"Modern Gas Lighting Conveniences," by T. J. Little, Jr.  
 "Illuminating Value of Petroleum Oils," by Dr. A. H. Elliott.  
 "Street Lighting Fixtures; Gas and Electric," by H. Thurston Owens.  
 "Structural Difficulties in Installation Work," by James R. Strong.  
 "Architecture and Illumination," by Emile G. Perrott.  
 "Intensity of Natural Illumination Throughout the Day," by Leonard J. Lewinson.  
 "The Integrating Sphere in Industrial Photometry," by Dr. Clayton H. Sharp and Preston S. Millar.  
 "The Ives Calorimeter in Illuminating Engineering," by Dr. Herbert E. Ives.  
 "Calculating and Comparing Lights from Various Sources," by Carl Hering.  
 "The Calculation of Illumination by the Flux of Light Method," by J. R. Cravath and V. R. Lansing.  
 On Tuesday, October 6, at 2 p. m., these papers will be taken up:  
 "Street Lighting with Gas in Europe," by E. N. Wrightington.  
 "Design of the Illumination of the New York City Carnegie Libraries," by L. B. Marks.  
 "Engineering Problems in Illumination," by Alfred A. Wohlaue.  
 "Intrinsic Brightness of Lighting Sources," by J. E. Woodwell.  
 "Some Experiments on Reflection from Ceiling, Walls and Floor," by V. R. Lansing and T. W. Rolph.  
 "The Relation Between Candle-Power and Voltage of Different Types of Incandescent Lamps," by Francis E. Cady.

**Rochester Engineering Society.**—A party of between fifty and sixty members of the Rochester Engineering Society, guests of the Rochester Railway and Light Company and its staff, including General Manager R. M. Searle, Assistant General Manager J. T. Hutchings, Superintendent T. H. Yawger, Assistant Superintendent C. N. Pratt, Electrical Engineer J. C. Parker, and others on September 25 inspected the company's transformer station on Elmwood avenue and the steam turbine in the station on the river flats just north of Platt street bridge. The room where the current is received direct from Niagara Falls, with its great automatic circuit breakers, was also shown and explained. All of the latest improvements in transformer apparatus is installed in the building. From this station the party proceeded to the station on the river flats, where the big 4,000 horse power steam turbine, one of the few thus far installed in this State outside of Greater New York, was shown and its methods of operation explained. The relation between the two stations was also pointed out. From this station the party proceeded by special car to Powers' Hotel, where a luncheon was served in a private dining room. What had been seen was discussed at length at the luncheon, and the party did not disperse until a late hour.

**International Association of Police Chiefs.**—Major Richard Sylvester, of Washington, D. C., President of the International Association of Police Chiefs, has notified the members that the next annual meeting of the Association will be held during the second week of May of next year in Los Angeles, Cal. Los Angeles was selected because many members of the association have never been in California, and the invitation of Chief Kern of the California city was a tempting one. It is probable that many of the police chiefs will attend the Seattle exposition after the business sessions of the Association are concluded.

**Association of Commercial Executives.**—Delegates to the second annual convention of the association, representing men at the head of civic betterment organizations throughout the East, opened their sessions at the Hotel Denis, Atlantic City, Oct. 2. Mayor Stoy welcomed the delegates, and George W. Tryon, of Philadelphia, and George S. Lenhart, of Atlantic City, headed the list of speakers who advocated newspaper advertising for cities for which booms are desired, while executive officers of the association reported a general increase in membership and finances during the year. Frank D. La Lanne, of Philadelphia, president of the National Board of Trade, was the principal speaker at the annual banquet of the organization. He advocated a general taking up of plans for the booming of municipalities covered by delegates to the convention. Officials of the organization also advocated a national movement for bettering municipal conditions of cities of the United States.

### Calendar of Meetings

**September 29-October 10.**  
**Sixteenth Annual Irrigation Congress.**—Albuquerque, N. M.  
**October 5-6.**  
**Illuminating Engineering Society.**—Second annual session, Hotel Walton, Philadelphia, Pa.  
**October 5-19.**  
**Greater New York Taxpayers' Conference.**—Budget Exhibit City Investing Building, New York City.  
**October 6-9.**  
**National Tax Association.**—Second International Conference, Toronto, Canada.—A. C. Pleydell, Corresponding Secretary, New York City.  
**October 7.**  
**American Society of Civil Engineers.**—Regular semi-monthly meeting, Society House, 220 West Fifty-seventh street, New York City.—Charles Warren Hunt, Secretary.  
**October 7.**  
**Empire State Gas and Electric Association.**—Annual meeting, United Engineering Societies Building, 29 West Thirty-ninth street.—Charles H. B. Chapin, 154 Nassau street, New York City, Secretary.  
**October 7-9.**  
**Lakes-to-the-Gulf Deep Waterway Association.**—Third annual convention, Chicago, Ill.—W. F. Saunders, Secretary, St. Louis, Mo.  
**October 8-10.**  
**Kansas Gas, Water and Electric Light Association.**—Annual meeting, Pittsburg, Kan.—J. D. Nicholson, Newton, Kan., Secretary.  
**October 11.**  
**International Roads Congress.**—First convention, Paris, France.—President Leithier, l'Inspecteur General des Ponts et Chaussees.  
**October 12-17.**  
**American Street and Interurban Railway Association.**—Twenty-seventh annual meeting, Atlantic City, N. J.  
**October 13.**  
**American Society of Mechanical Engineers, New York City.**—Two papers on gas producer plants.—Calvin W. Rice, Secretary, 29 West 29th street, New York City.  
**October 20-23.**  
**American Society of Municipal Improvements.**—Fifteenth annual convention, Hotel Dennis, Atlantic City, N. J.—A. Prescott Folwell, Secretary, 239 West Thirty-ninth street, New York City.  
**October 30-31.**  
**American Electro-chemical Society.**—Fall meeting, New York City.—Prof. J. W. Richards, Secretary, Lehigh University, South Bethlehem, Pa.  
**November 17-19.**  
**Atlantic Deeper Waterways Conference.**—Baltimore, Md.—J. Hampton Moore, President, Philadelphia, Pa.  
**November 17-20.**  
**National Municipal League.**—Annual meeting, Pittsburg, Pa.—Clinton Rogers Woodruff, Secretary, 705 North American Building, Philadelphia, Pa.  
**American Civic Association.**—Annual Meeting, Pittsburg, Pa.—Clinton Rogers Woodruff, Secretary, 705 North American Building, Philadelphia, Pa.  
**December 9-11.**  
**National Rivers and Harbors Congress.**—Washington, D. C.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Illinois	Bloomington	Oct. 8	Brick paving on concrete-asphalt filler, 5,500 yds.	C. F. Fauntz, City Engineer.
Ohio	Martins Ferry	Oct. 8, noon	Grading and paving North Fifth St.	E. D. Lash, Clk. Bd. Pub. Serv.
Ohio	Bellaire	Oct. 8	Improving 32nd St.	Bd. of Pub. Service.
Ohio	Oakley	Oct. 8, noon	Constructing cement sidewalks on Taylor avenue.	Oscar Kosche, Village Clerk.
Pennsylvania	Pittsburg	Oct. 8, noon	Improving 1 1-4 miles of public road.	F. P. Booth, County Controller.
Ohio	Dayton	Oct. 9, noon	Laying cement sidewalks, grading, etc.	W. A. Budroe, Clk. Bd. Pub. Serv.
Ohio	Middletown	Oct. 9	Brick paving alleys.	John Kuntz, Clk. Bd. Pub. Serv.
Indiana	Brookville	Oct. 9, 1 p.m.	Constructing road 11,588 ft. long.	C. A. Miller, County Auditor.
West Virginia	Charleston	Oct. 9, 3 p.m.	Paving, curbing, grading, sewerage, etc., sts.; cost, \$300,000.	W. A. Hogue, City Engineer.
Indiana	Tipton	Oct. 9	Constructing one mile of gravel road.	J. F. Barlow, County Auditor.
Ohio	Carthage	Oct. 10, noon	Grading, draining, etc., Fair Grounds, inc. 9,456 cu. yds. grading, 1,035 ft. 15-in. sewer pipe, 845 ft. 12-in., etc.	Hamilton Co. Agr. Soc., Wiggins Block, Cincinnati.
Colorado	Tampa	Oct. 10, noon	Bldg. and repairing 12 miles of wagon road to Aspen.	T. W. Jaycox, State Eng'r, Denver.
North Carolina	Raleigh	Oct. 10, noon	Laying 1,900 sq. yds. granolithic sidewalk.	Greater Raleigh Land Co.
Florida	Jacksonville	Oct. 12, 2:30 p.m.	Grading, curbing, and paving; Philip Prioleau, City Eng'r.	N. C. Wamboldt, Chm. B. P. W.
Kentucky	Port Thomas	Oct. 12, 10 a.m.	Bldg. macadam roads and cement sidewalks.	Capt. John H. Wholley.
Indiana	Wabash	Oct. 12	Constructing sidewalks, streets and sewers.	Fremont McLees, City Clk.
Iowa	Waterloo	Oct. 12	Several miles cement sidewalks.	City Council.
North Dakota	Washburn	Oct. 13, 2 p.m.	Grading approaches to bridge.	O. B. Wing, County Auditor.
Maryland	Hagerstown	Oct. 13	Macadamizing and grading 2 1-2 miles.	John E. Waggaman, County Clerk.
Ohio	Cleveland	Oct. 14, 11 a.m.	Grading, draining, etc., Dunham road, Bedford and So. Ken- burg townships.	A. B. Lea, County Surveyor.
New York	New York	Oct. 15, 11 a.m.	Asphalt, granite and asphalt block paving, etc., in Bronx.	Louis F. Haffen, Pres. Boro. Bronx.
Colorado	Guerida	Oct. 16, noon	Bldg. and repairing wagon road 1,600 ft. long to Whetmore.	T. W. Jaycox, State Eng'r, Denver.
Ohio	Oakley	Oct. 16, noon	Constructing cement sidewalks.	Oscar Kosche, Village Clerk.
Ohio	Cincinnati	Oct. 16, noon	Improving portion of Dawson road, Columbia township; Spec. 798.	Fred Dreihls, Clk. Co. Com'rs.
Indiana	Monticello	Oct. 16, noon	Constructing macadam road in Prairie township.	J. L. Ackerman, County Auditor.
Pennsylvania	Carlisle	Oct. 16	Bldg. 3,600 ft. of road with one bridge.	State Highway Dept., Harrisburg.
Pennsylvania	Media	Oct. 16	Bldg. 2 sections of Tanquay road.	State Hwy. Dept., Harrisburg.
Pennsylvania	York	Oct. 16	Bldg. 2,700 ft. of road with 5 bridges.	State Hwy. Dept., Harrisburg.
Indiana	Terre Haute	Oct. 17, 11 a.m.	Bldg. McClintock gravel road, in Nevins township.	Nathan G. Wallace, Co. Auditor.
Ohio	Wellston	Oct. 17	Repairing 904 lin. ft. Jackson and Keystone turnpike.	W. J. Sumate, County Auditor.
Pennsylvania	Haworth	Oct. 19, 8 p.m.	Macadamizing, grading, etc., roads, 21,748 ft. long.	Wm. T. McCulloch, Mayor.
Kansas	Kansas City	Oct. 19	Macadam paving on Boyne and Norton road.	County Commissioners.
Indiana	Marion	Oct. 20, 10 a.m.	Bldg. gravel road in Grant and Blackford Counties.	A. Y. Stout, County Auditor.
Ohio	Newburg Hts.	Oct. 20, 8 p.m.	Grading and macadamizing Peck ave. and Independence road.	P. S. Ruggles, Village Clerk.
Ohio	Cleveland	Oct. 21, 11 a.m.	Grading, draining and improving State road No. 5.	A. B. Lea, County Surveyor.
Pennsylvania	Pittsburg	Oct. 22	Constructing 3.3 miles County road.	F. P. Booth, County Controller.
Pennsylvania	Waynesburg	Oct. 22	Constructing State roads, 42,000 ft. in 3 townships.	Jos. W. Hunter, St. Hwy. Com'r.
Ohio	Cincinnati	Oct. 23, noon	Improving Duck Creek road.	Fred Dreihls, Clk. Co. Com'rs.
Indiana	Portland	Oct. 24, noon	Constructing a gravel road.	Jay County Commissioners.
Kansas	Kansas City	Oct. 26	Macadamizing De Fries road.	County Commissioners.
South Dakota	Aberdeen	Oct. 26	Asphalt or brick paving certain streets.	F. W. Raymond, City Auditor.
Kansas	Kansas City	Nov. 2	Macadamizing De Fries road to Mill Creek.	County Commissioners.
Kansas	Kansas City	Nov. 9	Macadamizing 18th street.	County Commissioners.
Equador	Guayaquil	Dec. 1	Paving and sewer work.	Sewerage and Water Board.
WATER SUPPLY				
New York	Brooklyn	Oct. 7	Furn., erecting new pumping stations; also new plants, complete, at Smith's Pond, Clear Stream and Valley Stream, L.I.	John H. O'Brien, Com'r W. S., G. & E.
Illinois	Franklin Grove	Oct. 9	Furn. and installing water mains, etc., in village.	Village Council.
Mississippi	Clarksdale	Oct. 9	Sinking 6-in. deep well.	M. W. Purnell, City Clerk.
Missouri	Alba	Oct. 10	Bldg. steel tower and 50,000-gal. tank; 300 ft. 8-in. c. i. pipe; 4,000 ft. 6 and 4-in. pipe, etc.	W. F. Barnett, City Clerk.
Indiana	Evansville	Oct. 12, 7 p.m.	Constructing municipal filter plant; cost, \$225,000.	W. M. Madden, Clk. Water Board.
Colorado	Burlington	Oct. 12, noon	Bldg. w. w. system, inc. 60,000 gal. steel tank, 100 ft. high; 1,492 ft., 6-in. 4,155 ft. 4-in. c. i. pipe; 6-in. gate, valve and box, four 4-in. gate valves and boxes; fifteen 4-in. fire hydrants; valve key, Ts, etc.; 50 water meters; 75-gal. pump, to raise water from 200 ft. well to elev. tank; gaso. engine, 12 h.p.; bid on all or part of work; specifications on hand.	W. D. Selder, Chm. W. W. Com.
Ohio	Dayton	Oct. 12	Furn. air compressor.	Wm. Budroe, Clk. Bd. Pub. Serv.
Kansas	Ellinwood	Oct. 12	Constructing water works.	G. A. Menzle, City Clerk.
Ohio	Reading	Oct. 12	Furn. and laying pipes, hydrants, etc., on several streets.	C. V. Dilk, Clk. Bd. Pub. Affrs.
Illinois	Decatur	Oct. 12, 8 p.m.	Bldg. 2 concrete-steel watertanks, 2 concrete or steel suction wells and laying pipes.	Albert Leach, City Clerk.
New York	Kings Park	Oct. 14, 3 p.m.	Extens. water supply system at State Hospital.	Kings Park State Hospital.
Virginia	Richmond	Oct. 14, 5 p.m.	Excavating pipe trenches and for hauling; furn. 36, 30 and 12-in. c. i. pipe, specials, pig lead, etc.	E. E. Davis, Supt. Water.
Ohio	Chagrin Falls	Oct. 14, noon	Laying 4-in. water pipe, etc., in 4 streets.	R. W. Stoneman, Clk. Trus. P. A.
Brit. Columbia	Vancouver	Oct. 14, 4 p.m.	Supplying c. i. pipes, steel pipes and Ludlow Water Hydrants.	W. McQueen, City Clerk.
Texas	Brownwood	Oct. 15	Furn. single-acting, belt-driven triplex power pump of 1,500,000 gal. and 100 h.p. producer gas engine, etc.	W. C. Harward, Supt. W. W.



Maryland.....	Oakland.....	Oct. 19.....	Constructing water works and sewerage systems.....	Penniman & Fairley, Eng'rs, Balt're.
Texas.....	Houston.....	Oct. 19, 3 p.m.....	Install., complete, 15,000,000-gal. pumping engine.....	H. B. Rice, Mayor.
New Jersey.....	Verona.....	Oct. 28, 8 p.m.....	Constructing system of water works for borough, inc. 1,000 tons c. i. pipe, 20 tons specials, 87 fire hydrants, 152 valves, and 9 miles of pipe laying.....	Wm. A. Smith, Chm. Water Com.
Montana.....	Helena.....	Oct. 29.....	Constructing pipe line and distributing system.....	J. A. Mattson, City Clerk.
New Jersey.....	Passaic.....	Oct. 30, 8 p.m.....	Laying, dis., etc., 37 miles 6 to 20-in. pipe, hydrants, etc.; furn. and delivering same; furn. new water supply, 3 to 12,000,000 gals. per day from wells or surface streams.....	Geo. K. Rose, Chm. Water Com.
New York.....	Cohoes.....	Nov. 2.....	Plans, specifications and estimate of mechanical filtration plant.....	A. T. Kniffin, Supt. W. W.

## SEWERAGE

West Virginia.....	Parkersburg.....	Oct. 8.....	Constructing sewer in Sixth street.....	City Auditor.
Connecticut.....	New Haven.....	Oct. 9, 2 p.m.....	Constructing sewers in 3 streets.....	C. W. Kelly, City Engineer.
Utah.....	Salt Lake.....	Oct. 9, 8 p.m.....	Constructing pipe sewers in sewer extension No. 199.....	H. C. McMillan, Sec'y Bd. Pub. Wks.
Ohio.....	Columbus.....	Oct. 9, noon.....	Bldg. 1,931 ft. 30-in. sewer; 1,043 ft. 24-in.....	E. W. Hirsch, Sec'y Bd. Pub. Serv.
Kentucky.....	Louisville.....	Oct. 9, noon.....	Bldg. Green St. sewer; Cont. No. 12; mostly concrete, inc. 550 ft. 36 in.; 1,330 ft. 24-in.; av. depth of cut, 13 ft.; 325 cu. yds. concrete.....	J. B. F. Breed, Ch. Eng. Sewer Comrs.
West Virginia.....	Charleston.....	Oct. 9, 3 p.m.....	Constructing sewers, paving, etc., various sts.; cost, \$300,000.....	W. A. Hogue, City Engineer.
Minnesota.....	Adams.....	Oct. 10.....	Constructing 16,000 ft. of sewers.....	F. Tolhore, Village Recorder.
Ohio.....	Carthage.....	Oct. 10, noon.....	Constructing sewers, etc., in Hamilton Co. Fair Grounds.....	H. Lee Early, Pres. Bd. Agr.
North Carolina.....	Raleigh.....	Oct. 10, noon.....	Constructing 6,000 ft. 6 and 8-in. sewer.....	Releigh Real Estate & Tr. Co.
Oklahoma.....	Lawton.....	Oct. 12.....	Bldg. sewers to cost \$40,000.....	W. R. Julian, City Clerk.
Dist. of Col'bia.....	Washington.....	Oct. 12, noon.....	Bldg. several sewers and extension of 1 street sewer.....	Jay J. Morrow, Eng'r Com'r.
Ohio.....	Steubenville.....	Oct. 12, noon.....	Bldg. sewer in Linden ave. and 7th street.....	H. G. Simpson, Clk. Bd. Pub. Serv.
Indiana.....	Wabash.....	Oct. 12, 6 p.m.....	Completing comb. sewer in alley north of Walter street.....	Fremont McLees, City Clerk.
Ohio.....	Jefferson.....	Oct. 12, 1 p.m.....	Bldg. 2,400 ft. sewer and disposal plant for Co. buildings.....	R. C. Young, County Com'r.
Ohio.....	Logan.....	Oct. 13, noon.....	Bldg. sewers on North St. and Zanesville road.....	F. C. Grove, Village Clerk.
Ohio.....	Cleveland.....	Oct. 13, noon.....	Bldg. sewer in E. 67th St., with temporary outlet; also outlet E. 40th St. sewer at Kingsbury Run.....	A. R. Callow, Sec'y Bd. Pub. Serv.
Michigan.....	Hillsdale.....	Oct. 13.....	Constructing pipe sewers, to cost \$5,000.....	S. H. Moore, City Clerk.
Minnesota.....	Springfield.....	Oct. 13.....	Bldg. 4,688 ft. 8 and 12-in. sewers.....	A. Frederickson, Village Clerk.
Ohio.....	Circleville.....	Oct. 13.....	Bldg. purification plant for County Infirmary.....	N. C. Bohnert, County Aud.
Pennsylvania.....	Philadelphia.....	Oct. 14.....	Bldg. Sec. B, branch sewers; Sec. C, inlets.....	Geo. R. Stearns, Dir. Pub. Wks.
Ohio.....	Columbus.....	Oct. 14, noon.....	Bldg. 916 ft. 42 and 36-in. 200 ft. 15-in. sewer.....	E. W. Hirsch, Bd. Pub. Serv.
Maryland.....	Baltimore.....	Oct. 14, 11 a.m.....	Constructing sewage disposal works; west low level interceptor, force main sewer and force main; Sanitary Contracts, Nos. 30, 31, 32 and 33, as advertised Sept. 23.....	J. Barry Mahool, Pres. Bd. Awards.
California.....	Oakland.....	Oct. 14, 11 a.m.....	Extending storm culvert from Excelsior to Lake Shore avenue.....	W. B. Fawcett, Sec'y Bd. Pub. Wks.
Illinois.....	Chicago.....	Oct. 15, 11 a.m.....	Bldg. concrete conduit, inc. bulkhead and inverted siphon and brick sewer in Western ave.; estimated cost, \$600,000.....	C. A. V. Standish, Sec'y Bd. L. Imp.
Minnesota.....	Pipestone.....	Oct. 15, 8 p.m.....	Bldg. 2,105 ft. 8-in. sewers, Dist. Nos. 11, 12 and 14.....	S. W. Funk, City Recorder.
Kentucky.....	Louisville.....	Oct. 16.....	Bldg. Breckenridge street sewer, Contract 13.....	Sewerage Commission.
Maryland.....	Oakland.....	Oct. 19.....	Bldg. sewer system and water works for city.....	Penniman & Fairley, 411 Marine Bank Bldg., Baltimore, Engrs.
New Jersey.....	Westfield.....	Oct. 19, 8:15 p.m.....	Constructing 1,550 ft. 8-in. sewer, etc.....	A. W. Vars, Town Surveyor.
Kentucky.....	Louisville.....	Oct. 21.....	Constructing Section E, Southern outfall sewer, Contract 14.....	Sewerage Commission.
Pennsylvania.....	Wilkes-Barre.....	Oct. 26, noon.....	Bldg. mile of circ. brick sewer; B. K. Finch, City Engineer.....	Fred H. Gates, City Clerk.
New York.....	Rye.....	Oct. 28, 3 p.m.....	Bldg. 90,000 ft. 8 to 18-in. vit. pipe sewers, laid complete, much in rock excavation; 12,600 ft. 4 to 16-in. iron pipe sewers, siphons and force main; 1,400 ft. subaqueous iron effluent outlet; 2 small pumping stations, complete; sewage tanks and coke filter beds, etc.; much piling and earth work.....	G. Everett Hill, 156 5th Ave., N. Y. C.
Arkansas.....	Newport.....	Nov. 1.....	Constructing \$40,000 sewerage system.....	Lund & Hill, Little Rock, Engrs.
California.....	Selma.....	Nov. 2.....	Constructing sanitary sewer system.....	R. C. Gibbs, City Clerk.
Ecuador.....	Guayaquil.....	Dec. 1.....	Constructing sewerage system.....	Int. Bur. of Am. Rep., Wash'n, D.C.

## BRIDGES

Kansas.....	Manhattan.....	Oct. 9, noon.....	Bldg. 60, 70 and 100 ft. bridges.....	C. A. Hungerford, Co. Clerk.
Indiana.....	Indianapolis.....	Oct. 8, 10 a.m.....	Bldg. 2 bridges, concrete culvert and high truss bridge.....	Albert Sahn, County Auditor.
Indiana.....	Rushville.....	Oct. 8, 2 p.m.....	Construction and repair of 9 bridges.....	A. L. Winship, County Auditor.
Indiana.....	Peru.....	Oct. 8, noon.....	Bldg. 10 bridges and repairing substructure over Wisaw Creek.....	Charles Griswold, County Auditor.
Dist. of Col'bia.....	Washington.....	Oct. 8, 11 a.m.....	Bldg. single-leaf railway rolling-lift bridge at navy yard.....	R. C. Holliday, Navy Dept.
Kansas.....	Manhattan.....	Oct. 9, noon.....	Bldg. 60, 70 and 100-ft. steel bridges, 2 plank, 2 conc. floors.....	Geo. H. Hungerford, County Clerk.
Ohio.....	Cincinnati.....	Oct. 9, noon.....	Constructing bridge for County; Spec. No. 789.....	Stanley Struble, Pres. Co. Com'rs.
Indiana.....	Brookville.....	Oct. 9, 2 p.m.....	Bldg. 2 arch bridges and approaches.....	Chas. A. Miller, County Auditor.
Nebraska.....	Sidney.....	Oct. 10.....	Bldg. pile and stringer bridge over No. Platte river, near Irving.....	H. T. Doran, County Clerk.
Ohio.....	Cincinnati.....	Oct. 12, noon.....	Bldg. super. viaduct from 8th to 3rd St. for railway.....	Cinc. So. Ry., Ingalls Bldg.
Indiana.....	Princeton.....	Oct. 12, 11 a.m.....	Furn. erecting and repairing certain steel bridges.....	John P. Moore, Chm. Co. Com'rs.
Ohio.....	Mt. Vernon.....	Oct. 12, noon.....	Bldg. super of 2 and substructures of 1 bridge.....	C. A. Mitchell, County Auditor.
Iaho.....	Pocatello.....	Oct. 12, 2 p.m.....	Bldg. bridge over Bear river at Grace.....	Geo. T. Hyde, Chm. Co. Com'rs.
Ohio.....	Celina.....	Oct. 13, 10 a.m.....	Bldg. 6 bridges and repairing one.....	T. A. Weis, County Auditor.
New Jersey.....	Salem.....	Oct. 14, 11 a.m.....	Bldg. 60-ft. bridge, stone or concrete sub.....	W. J. Freas, Salem, Co. Com'r.
Oklahoma.....	Muskogee.....	Oct. 15, 10 a.m.....	Erecting 19 bridges, according to plans, etc.....	W. E. Looper, County Clerk.
Oklahoma.....	Watonga.....	Oct. 17, noon.....	Bldg. 2 wood and pile river bridges.....	John M. Tyler, Clk., Blaine County.
Ohio.....	Lancaster.....	Oct. 17, 11:30 a.m.....	Bldg. steel superstructures of 2 bridges.....	H. C. Belt, Clk. County Com'rs.
Minneapolis.....	New Ulm.....	Oct. 19, 5 p.m.....	Furn. mat. and labor for street approach; conc. floor, 126-ft. bridge.....	Ernst Wicherski, City Clerk.
Ohio.....	St. Clairsville.....	Oct. 19.....	Constructing new bridge over creek.....	County Auditor.
California.....	Barstow.....	Oct. 26, 11 a.m.....	Bldg. 200 ft. bridge of one through pin connected 10-panel truss bridge, resting on concrete bulk heads.....	San Bernardino, Co. Superv.

## LIGHTING AND ELECTRICITY

Ohio.....	Delaware.....	Oct. 8, noon.....	Furn. and maintaining electric arc or mantle gas lights or both for illuminating purposes for 10 years, from Dec. 1, 1908.....	R. M. Swickheimer, Clk. B. P. S.
Iowa.....	Atlantic.....	Oct. 8, 2 p.m.....	Bldg. on found. in place, 30,000-ft. 40-10 pressure steel tank holder, about 44 ft. in diameter.....	F. A. Kidder, c-o Gas. Co., Red Oak.
Utah.....	Salt Lake.....	Oct. 9, 8 p.m.....	Erecting brick bldg. for suction gas producer plant.....	Louis C. Kelsey, City Engineer.
New York.....	New York.....	Oct. 12, 2 p.m.....	Install elec. equip. overhead trolley, Blackwells Is'd, bridge.....	J. W. Stevenson, Com'r Bridges.
Indiana.....	Marion.....	Oct. 13, 9:30 a.m.....	Bldg. add. to boiler house and elec. light plant, inc. turbine room and coal shed; cost, \$39,954.....	John O. Wilson, City Clerk.
Georgia.....	Brunswick.....	Oct. 15.....	Electric wiring and fixtures for new County Jail.....	J. B. Wright, Chm. Co. Com'rs.
Porto Rico.....	Ponce.....	Oct. 15.....	Constructing electric light plant; approx. surface, 134 hectares, length of sts., 34 kilo.; approx. \$18,000 to \$25,000, 70 arc lights, 6 amp.; 20 incan., 187 watts; 300 of 32 c.p., 100 18 c.p., 1,500 to 2,000 kilo. for pub. bldgs.....	Blass C. Silva, City Engineer.
Dist. of Col'bia.....	Takoma.....	Oct. 17, noon.....	Comb. gas and electric fixtures at Walter Reed Army Hosp.....	H. L. Peters, Q. M., U. S. Army.
Kansas.....	Atchison.....	Oct. 19, 5 p.m.....	Electric wiring in high school.....	H. B. Mize, Chm. Bd. Education.
New York.....	Oneonta.....	Oct. 20, 8 p.m.....	Lighting streets, 100 arc lights, 2,000 nominal candle-power, to burn all night, 5 years or 2 1-2 years from March 1, 1909.....	Henry D. McLawry, Village Clerk.
Egypt.....	Cairo.....	Oct. 29.....	Equipment for electric light plant for town of Zagazig.....	Ministry of the Interior.
Chile, S. A.....	San Eugenio.....	Nov. 2.....	Furn. three 300 k.w. generators, etc., for 900 k.w. station.....	Direction Gen. de los Ferrocarriles de Estado.

## MISCELLANEOUS

New York.....	Governors' Island.....	Oct. 8, 11 a.m.....	Repairs to crematory at Fort Jay.....	Quartermaster, Fort Jay.
New York.....	New York.....	Oct. 8, noon.....	Furnishing and delivering cement.....	Allen N. Spooner, Com'r of Docks.
Ohio.....	Dayton.....	Oct. 8.....	Smoke consuming device for County Memorial Building.....	W. E. Russ, Arch., Conover Bldg.
Pennsylvania.....	Reading.....	Oct. 12, 7 p.m.....	Collection, removal and disposal of all garbage, offal and dead animals for 3 and 5 years.....	Elmer H. Beard, City Engineer.
New York.....	New York.....	Oct. 13, noon.....	Labor and material for final disposition of Bronx garbage.....	Foster Crowell, Com'r St. Cleaning.
Ohio.....	Centerville.....	Oct. 14.....	Bldg. new township hall; Slover Bros., Dayton, Archts.....	Clarence McCray, Clk. Wash. twp.
Georgia.....	Brunswick.....	Oct. 15.....	Constructing County jail; Edwards & Walter, Architects.....	J. B. Wright, Chm. Co. Comrs.
Brit. Columbia.....	Vancouver.....	Oct. 15, noon.....	Furn. auto. chemical fire engine and auto hose truck.....	W. McQueen, City Clerk.
Brit. Columbia.....	Vancouver.....	Oct. 16, 4 p.m.....	Furn. auto. chemical and auto hose wagon.....	William McQueen, City Clerk.
Virginia.....	Norfolk.....	Oct. 17, 11 a.m.....	Bldg. timber wharf, 350 x 50 ft., dredging 40,000 cu. yds. mud, etc., at Navy Yard; cost, \$60,000.....	Commandant, Navy Yard.
California.....	Barstow.....	Oct. 26.....	Bldg. 200 ft. 10-panel truss bridge.....	Board County Supervisors.
England.....	London, E. C.....	Nov. 10.....	Supply and erection, 60-ton refuse incinerator for Adelaide, Aus.....	Agt. Gen. for So. Australia, 1 Crosby Square.
Illinois.....	Chicago.....	Nov. 2, 11 a.m.....	General work on new city hall.....	John J. Hanberg, Com'r Pub. Wks.

## STREET IMPROVEMENTS

**Decatur, Ala.**—Contracts are soon to be awarded for thirty miles of pike roads to be constructed in Morgan County to cost about \$100,000.

**Foley, Ala.**—South Baldwin Good Roads Club has recently been formed for the purpose of making arrangements for improving the highways and roads throughout this section.

**Tempe, Ariz.**—The City Clerk wants estimates for the construction of cement sidewalks; about \$5,000 will be expended.

**Burlingame, Cal.**—Town will be bonded for much needed street improvements. Trustee Bodwell, Committee on Streets.

**El Centro, Cal.**—The City Trustees have accepted plans for septic tank sewer system estimated to cost \$40,000.

**Marysville, Cal.**—The question of good roads for this vicinity is under discussion.—Address Mayor.

**San Luis Obispo, Cal.**—The Board of Supervisors have plans under way for a new road between this city and Avila, a distance of about seven miles. New road is to be modern and cost nearly \$12,000.

**Sacramento, Cal.**—Chamber of Commerce endorses plans bonding State for \$18,000,000 with which to construct 3,000 miles of roads.

**Leadville, Col.**—New road is planned between Buena Vista and Red Cliff in Eagle County.—T. W. Jaycox, State Engineer, Denver.

**Hartford, Conn.**—Council has passed a resolution establishing new lines of sidewalk, curb and gutter stones on both sides of Gray street, to be laid to the established grade of street, and a new street or highway, to be known as Wilton street, between Adelaide street and Bond street.—Henry F. Smith, City Clerk.

**Wilmington, Del.**—Plans are under consideration for the widening of Tenth street from Shipley to Tatnall street, and the paving of same.

Street improvement bonds amounting to \$100,000 have been sold.

**Quincy, Ill.**—The City Clerk states that an ordinance has been passed on first reading providing for the paving of Kentucky street, from Twelfth to Eighteenth streets, with brick and asphalt filler.—F. L. Hancock, City Engineer.

**Jacksonville, Fla.**—Council is arranging for the widening of one block of Adams street, viz., Palmetto street to Sparring street, to conform to the width of the remaining part of the street, to Florida avenue.

**Palmetto, Fla.**—This town will soon pave the principal streets.—E. F. Wilson, Mayor.

**Pensacola, Fla.**—The Clerk of the Board of Public Works was instructed to advertise for bids for placing a concrete curbing and gutter in front of school building No. 1.

**Wallace, Ida.**—Arrangements are under way for a new road from a point on Big Creek to the Powhattan mine.

**Batavia, Ill.**—Council is considering plans for beginning work at once on the two new street extensions to pass through the fifty-acre tract in the southeast end of the city.

**Bloomington, Ill.**—City Council has passed an ordinance for a brick pavement, with concrete foundation, on Catherine street, from Chestnut to the alley, extending east from Catherine street, between Chestnut and Walnut streets.—C. F. Fauntz, City Engineer.

**Chicago, Ill.**—Arrangements are being made for improving Franklin Boulevard from the elevation at the Chicago and Northwestern tracks to Humboldt Park.—Address Engineer A. C. Schroeder.

**Elgin, Ill.**—Council is considering many petitions for sidewalks and the Board of Local Improvements is advertising for bids; cement is growing in favor.

Property owners of North Spring street favor brick pavement with concrete foundation for the proposed improvement of North Spring street.—Address Mayor Price.

**Galesburg, Ill.**—Ordinance has passed for brick pavement on concrete foundation and 2-inch sand cushion with sandstone curb, etc., on North Prairie street, to cost \$5,763.98, of which brick and laying will cost \$4,200, curbing \$561, and grading and excavating \$420.—F. M. Connolly, Engineer. Board of Local Improvements.

**Joliet, Ill.**—The Board of Public Improvements recommends the construction of two pieces of concrete sidewalk; one is for 140 feet on the south side of Western avenue, east of Broadway, to cost \$163; the other is on the east side of Vine street from Douglas to Shields, and will cost \$662.50; the estimates and ordinances were adopted.

**Oak Park, Ill.**—The Board of Public Improvements will receive bids for 31,335 square feet of cement walks.—B. C. Brandtsted, Assistant Engineer.

**Ottawa, Ill.**—The question of better roads for this county were discussed at a meeting held recently for the purpose.

**Pekin, Ill.**—Ordinance will shortly be introduced providing for the replacing of miles of old brick sidewalks with concrete walks.

Council has passed an ordinance calling for the construction of four miles of cement walks.

**Peoria, Ill.**—Council has ordered four miles of cement walks. Address Street Committee.

**Fortville, Ind.**—The County Commissioners have been petitioned by the residents of this town for the paving of State street.

**Indianapolis, Ind.**—Preliminary work has been started on improvements to Fall Creek Boulevard north of Fall Creek; the boulevard, when completed, will extend from Capitol avenue to Northwestern avenue; cost of improvements estimated at \$13,600.

The Board of Public Works will soon ask for bids for grading and paving the roadway of Twenty-eighth street, Christian street and Gladstone avenue, with asphalt.

**South Bend, Ind.**—Resolutions were adopted by the B. P. W. for a brick pavement in the alley south of Wayne street to Franklin street and for grading Terrace avenue from Portage avenue to the St. Joseph river; Leland avenue from Hudson to Terrace avenue.

**Wabash, Ind.**—An ordinance has been passed requiring cement walks to be laid in certain streets.—Fremont McLees, City Clerk.

**Des Moines, Ia.**—Council has passed a resolution providing for the paving with petrolium on Allen place and Terrace drive.

**Leavenworth, Kan.**—The Board of Commissioners has rejected all bids for the repaving of Cherokee street, because of the disagreement between the property holders regarding the adoption of Leavenworth brick for the paving; new resolution will be drawn up with new specifications.

**Louisville, Ky.**—Arrangements are being made for improving the roads at Waverly Hills, Ky., in the vicinity of the Tuberculosis Hospital. Address Secretary M. Wrigman, Columbia Trust Company, Fourth and Main streets, city.

**Holyoke, Mass.**—The Board of Public Works will improve Jackson street at once; it is expected that granite paving blocks will be laid from the new underpass to the top of the hill near the corner of Commercial street.

**Lee, Mass.**—The Massachusetts Highway Commission has asked for bids for a section of State highway in this town.

**Lynn, Mass.**—The Board of Mayor and Aldermen in special meeting upon the recommendation of the Committee on Finance passed a bond order authorizing \$26,000 worth of one year 4½ per cent. bonds for the completion and relocation of Sea street extension.

**Detroit, Mich.**—Huron Township, Wayne County, has voted \$50,000 bonds for constructing good roads. Wayne County Auditor, Detroit, Mich.

**Menominee, Mich.**—The Common Council is stated to have decided to hold an election for the purpose of voting on the issue of \$30,000 street improvement bonds.

An election will be held in November to decide the question of issuing \$30,000 street improvement bonds.

**Muskegon Heights, Mich.**—Council has accepted estimates for paving certain portions of McKinney avenue; estimated cost \$6,000.—C. S. Gamble, City Engineer of Muskegon.

**Minneapolis, Minn.**—The Hennepin County Board is preparing to expend \$185,000 in improving county roads.

**Columbia, Miss.**—The matter of paving a number of the principal streets is being agitated; Main street, from Third to Seventh, and Market street, from North Third avenue to South Third avenue, are among the streets named.

**Kansas City, Mo.**—J. L. Barnell, City Engineer, has prepared plans for paving certain portions of Union avenue with creosoted block.

The Board of Public Works contemplates the erection of a municipal paving repair plant, for repairing brick, macadam and asphalt pavement.—Robert W. Goodnow, Secretary Board of Public Works.

**St. Louis, Mo.**—About \$50,000 is to be expended on improving roads in St. Louis County during the fiscal year.

**Helena, Mont.**—Council is contemplating widening and paving with cement of Jackson street.

**Camden, N. J.**—Council has passed ordinance directing the paving of Vine street from Eighth to Ninth and Raymond avenue from Vine to State street with sheet asphalt on concrete foundation; paving with 2-inch bitulithic on 4-inch concrete base, and granite block along railroad tracks on Westfield avenue from Twenty-sixth to Twenty-seventh streets; paving with asphalt on concrete, Liberty street from Tenth street to Mount Ephraim avenue.—T. V. Bradley, Clerk of Council.

**Paterson, N. J.**—It is the intention of the County Board to permanently improve Main street from the point in this city where the permanent pavement ends to the point in the city of Passaic where the permanent pavement begins.

**Perth Amboy, N. J.**—The Clerk reports that the Mayor approved a resolution approving the Treasurer's sale of \$100,000 worth of street improvement bonds.

**Redbank, N. J.**—Residents of Front street, from Rue's garage to the Globe hotel, have petitioned for brick paving between those two points; a petition has also been received from residents of Monmouth street asking for paving between Broad street and the railroad station.

**Trenton, N. J.**—Council has passed ordinance to change the grade of Franklin street, between Hamilton avenue and Forrest street.—H. B. Salter, City Clerk.

**West Hoboken, N. J.**—Council contemplates paving Malone street, from Central avenue to the Hudson boulevard. Work to include resetting all existing curbing, flagging, setting new curb and paving with Belgian blocks.—John P. McMahon, Town Clerk.

**Auburn, N. Y.**—Alderman Fred Swart of the Ninth Ward has carried his resolution to have a dozen property owners provide cement sidewalks at once.

City Engineer W. Thomas Wooley is preparing plans for paving William street with asphalt, from the Central Presbyterian Church to a point twenty-five feet north of the property of Geo. P. Bowen; bids will be called for by J. S. Hanlon, City Clerk.

**Batavia, N. Y.**—The Board of Aldermen has decided to extend School street and widen Spink avenue.

**Binghamton, N. Y.**—State Engineer Frederick Skene, Capitol, Albany, is completing plans and bids will soon be called for by the Superintendent of Public Works, F. C. Stevens, for the construction of road known as the Kirkwood river road, a distance of 7.79 miles, extending from State line near Riverside to the intersection of the State Hospital road; estimated cost, \$99,250.

**Brooklyn, N. Y.**—The residents of Bleeker street, Ridgewood Heights section, are agitating the matter of having that thoroughfare paved by private contract; committee has been appointed to confer with Borough President Gresser on the subject.

The Fort Hamilton Citizens' Association at a meeting decided that Fifth avenue from Eighty-sixth to Ninety-fifth streets be paved in a proper manner and sidewalks laid.

**Buffalo, N. Y.**—Francis G. Ward, Commissioner of Public Works, has been instructed by Council to prepare plans for replacing piers of the Seneca street viaduct, over the Erie R. R., B. C. R. R., Pennsylvania R. R. and the N. Y. C. & St. L. R. R.

Mayor J. N. Adam, or County Engineer George C. Diehl, can be addressed regarding new boulevard which it is proposed to construct between this city and Niagara Falls.

**Elmira, N. Y.**—The Board of Park Commissioners has authorized work to be started by day labor for a concrete bridge over the lake outlet in Eldridge Park under direction of Park Superintendent Rudy.

**Lockport, N. Y.**—In the report of the Street Superintendent were the names of a number of property owners who failed to repair their sidewalks after having received the proper notification and he was authorized to do the work and return the bill of expense to the Council so that the same could be charged up as expenses to the property and collected as taxes.

Property owners on Harvey avenue, Price, Cottage and Clinton streets asked for sidewalk grades and the City Engineer was ordered to give it to them.

The Superintendent of Streets was ordered to make repairs on a number of streets. Aldermen McCoy, Morrill and Farley each offered resolutions that the Street Superintendent make repairs on certain streets, and these were referred to the Street Committee of Council.

**Niagara Falls, N. Y.**—The City Engineer has estimated the cost of paving Michigan avenue at \$18,821.

**Rochester, N. Y.**—Council has passed ordinances for grading, paving, cement walks, sewers, etc., in a number of streets.—F. X. Pifer, Secretary, Board of Control and Supply.

A delegation of Hudson avenue taxpayers recently called upon Commissioner Elwood, asking that the trap rock pavement between Clifford and Norton streets on that thoroughfare be repaired.

**Rome, N. Y.**—The City Engineer is preparing plans for paving West Dominick street, from the bridge to Dostater avenue, and Floyd avenue, from Stanwix street to the corporation line; bids will be called for by the Board of Public Works.

**Schenectady, N. Y.**—Mayor Van Voast



states that a new set of plans are being prepared by engineers of the New York Central Railroad for the widening of the Villa Road culvert, and will reduce the expense to \$55,000.

**Syracuse, N. Y.**—An issue of \$240,000 local improvement bonds was authorized by Council; \$25,000 represents the city property owners' share of sidewalk improvements made, and the remainder, \$215,000, represents the property owners' share of paving, paving repairs, sewer and grading improvements in various parts of the city.

**Troy, N. Y.**—Council has ordered the construction of crosswalks in the Fifth Ward; also grading, curbing, etc., in various streets.

**Utica, N. Y.**—The committee appointed to investigate the construction of a municipal asphalt repair plant is stated to have submitted a report to Council recommending the erection of the same; estimated cost, \$12,500.

**Shelby, N. C.**—Plans are being discussed by the Board of Aldermen for paving the residential section.

**Winston, N. C.**—Council will receive bids for constructing three miles of sanitary sewers according to plans and specifications prepared by J. N. Ambler, City Engineer.

**Beavertown, O.**—The County Commissioners, after a conference with Superintendent Ferneding of the Dayton and Xenia Traction Company, decided to pave Beavertown's principal street as soon as the road-building machinery can be moved from the Eaton pike; the traction company will pave along its rails.

**Canton, O.**—The Servers have adopted a resolution instructing the Clerk to notify the N. O. T. to repair the paving along the right of the company on East Lake street from Mahoning street to Belden avenue, and on South Market street from Lathrop street to the Wheeling & Lake Erie tracks at once.

**Dayton, O.**—Ordinance No. 7716, introduced by Mr. Welmer, has passed Council to appropriate real estate for the opening and extension of Pontiac avenue.

**Delaware, O.**—Council has decided to improve Van Deman avenue from Central avenue to Griswold street by excavating, grading, curbing, guttering, macadamizing and under-draining.

**Hamilton, O.**—Bonds amounting to \$1,189.12 for the Cottage street improvement have been disposed of to William N. Andrews, of Hamilton, for \$5 premium. William Reiff has purchased \$948.25 South Thirteenth street improvement bonds for a like sum.

City Engineer Egry has been instructed to prepare plans, specifications and estimates for paving South Front street from Sycamore to Walnut street with sheet asphalt.

**Ironton, O.**—A resolution has passed Council empowering Ordinance Committee to issue temporary loan bonds, \$4,000, to provide for the construction of new sidewalks in sections which extend from Etna to Pine streets, and from Pine to Lorain streets; also for the construction of sidewalks on the west side of Sixth street from Pleasant to Vine street and from Oak to Hepler street.

Council has adopted ordinance appropriating \$1,260 for the improvement of Fourth street from Pine to Hepler, and Fifth street from Oak to Mastin avenue.

**Marietta, O.**—Property owners of Greene street between Seventh street and the corporation line have petitioned Council to take steps for the paving of that thoroughfare, being willing to pay half the cost.

**Marysville, O.**—The County Commissioners have sold \$75,000 bonds for pikes throughout Union County.

**Oakwood, O.**—The Village Council has appropriated \$20,000 for street paving and for the installation of a sanitary sewer system; bids for the work will shortly be asked.

**Wellsville, O.**—The Service Board has instructed the City Engineer to prepare plans for the paving of Washington avenue, and for the improvement of Commerce street from Third to Ninth street by paving.

**Wooster, O.**—Bids will be received at once by J. Milner, City Auditor, for paving bonds.

**Youngstown, O.**—Council has adopted a resolution for the paving of Ellenwood avenue from Erie street to Heasley street.—H. C. Higgins, President of Council.

**Bartlesville, Okla.**—Plans have just been completed for paving twenty-nine blocks immediately.

**Guthrie, Okla.**—Nine miles of additional pavement have been ordered put in by Council; this includes forty-five blocks of asphalt in residence section and forty-two blocks of brick paving.

**Oklahoma City, Okla.**—Council is stated to have decided to grade and pave about twenty miles of streets in Oklahoma at a cost of about \$540,000.—George Hers, City Clerk.

**Altocna, Pa.**—Council has adopted an ordinance for terracing Willow avenue between Fifth and Eighth streets, and fixing the grade.

**Barto, Pa.**—About 11-5 miles of additional macadam roads will be constructed in Washington Township this year; work will begin as soon as necessary arrangements can be made.

**Brackenridge, Pa.**—All bids for the construction of curbing and paving were rejected.—J. C. Smith, Chairman Street Committee.

**Camp Hill, Pa.**—The State Highway Department, Harrisburg, will ask for bids for the construction of a concrete bridge at Camp Hill, in connection with road improvements there.

**Harrisburg, Pa.**—Highway Commissioner William Caldwell will ask for new bids in the matter of paving Green street, an estimated surface of 28,000 square yards, with any approved paving material at a maximum price of \$1.80 per square yard.

**Reading, Pa.**—Mayor Rick has signed resolutions to lay sidewalks on the south side of Greenwich street between Front and Pear streets; relay pavement at 1141 and 144 North Ninth street, 1008 Oley street, 611, 613 and 619 North Eleventh street; lay pavement on the east side of Locust street along Hampden planing mill; relay pavement at 113, 115 and 122 North Tenth street, and repair pavement at 904 and 906 Chestnut street.

**Stroudsburg, Pa.**—Arrangements are under way for improving the roads in this city and surrounding country; a large amount is to be expended for this purpose.

**Warren, Pa.**—Council has directed the Street Commissioner to replace the crosswalk on Pennsylvania avenue and Chestnut street, and to build a new crosswalk on the west side of Walnut street, crossing Cherry street.

**Washington, Pa.**—An ordinance providing for the paving of Morgan avenue has been adopted by the East Washington Council.

**Charleston, S. C.**—Brick pavement is favored for the proposed improvement of Broad street from Meeting to East Bay and on Meeting from Queen to Tradd street.

**Columbia, S. C.**—Council has ordered that Taylor street be improved with the \$3,500 on hand, which will be probably from the branch to Bull street.

**Dallas, Tex.**—Petition is being circulated for the issuance of \$250,000 bonds for construction of roads and bridges.

**Georgetown, S. C.**—Supervisor Joseph J. Johnson is arranging for modern new highways to be constructed throughout the city.

**Lenoir City, Tenn.**—The city has voted \$10,000 of bonds for street improvements.

**El Paso, Tex.**—Joseph U. Sweeney, Mayor, and Percy McGhee, City Secretary of El Paso, were in Austin recently conferring with the Attorney General regarding an issue of bonds aggregating in value \$500,000 for municipal betterments; the business district of El Paso is paved and part of the bonds just issued is to go to defray the cost of paving in the resident section; thirteen miles of one of the county roads are paved with asphalt, and it is now planned to connect the city with Cruces, N. M., with a forty-mile driveway of the same material.

**Fort Worth, Tex.**—The City Commission is considering the paving of South Main and Hemphill streets; petitions have also been received for paving Lipscomb street and laying water and other mains therein, and for opening, grading and paving street through property of Mrs. George Fuqua, between Kentucky avenue and Stella street.—Sam Davidson, Commissioner of Streets.

**Sherman, Tex.**—The Board of County Commissioners is again considering the matter of paving that portion of the Court Square which is not paved.

**Taylor, Tex.**—Council has decided to discontinue the work of macadamizing the streets in the city until next spring.

**Alexandria, Va.**—City Engineer E. C. Dunn has presented to Council ordinances fixing grades and changing curb line at the following places: Princess street between Payne and West, Queen street between Henry and Fayette streets, Alfred street between Prince and Duke streets; they were passed.

**Norfolk, Va.**—Bids will be received by the Board of Supervisors of Norfolk County until October 13, noon, for the purchase of bonds aggregating \$200,000 "Road Improvement Bonds," payable twenty years after date, with interest from date at 4½ per centum per annum, payable semi-annually.—Alvah H. Martin, County Clerk.

**Chehalis, Wash.**—An ordinance recently passed provides that all the principal residence streets shall have cement or concrete walks.

**Georgetown, Wash.**—Council will receive bids for \$50,000 worth of street improvements in the eastern part of the city. Roosevelt, Wellington and Beaumont

streets are the main thoroughfares to be improved; they will be graded and sidewalked.

**Tacoma, Wash.**—Council has passed an ordinance instructing the Commissioner of Public Works to estimate grading Washington and other streets.

**Follansbee, W. Va.**—The question of issuing bonds for street improvements will be submitted to the voters at once.

**Morgantown, W. Va.**—Council has ordered Third street paved between Grant avenue and McLane avenue.

**Martinsburg, W. Va.**—Council has determined to pave the Public Square with vitrified brick; the improvement will cost in the neighborhood of \$7,000.

**Milwaukee, Wis.**—Resolution has been adopted for paving Pabst and Lisbon streets with macadam.

**Tomah, Wis.**—R. E. Kyle, Chairman Committee on Public Works, states, with regard to the proposed brick paving, bids for which were advertised to be opened September 19, that the voters petitioned for permission to vote on a bond issue for the work, so it was decided not to receive bids on September 19, but to call an election for October 27, and if the bonds carry, new bids will be called for.—D. J. Aller, City Clerk.

## SEWERAGE

**Marvell, Ark.**—N. W. Green, Chief Engineer, is making surveys and estimate cost for sewer system.

**Monticello, Ark.**—The city is considering the matter of installing a sewerage system and septic tank disposal system.

**East San Jose (P. O. San Jose, Cal.)**—Town Trustees are to form an assessment district to construct sewer system and septic tank.

**El Centro, Cal.**—Election is to be held to vote on issuing \$40,000 of bonds for constructing septic tank sewer system.

**Oakland, Cal.**—Council has authorized the Board of Public Works to construct a concrete culvert easterly of Lake Shore avenue; thence across Lake Shore avenue and terminating in the northeastern arm of Lake Merritt.

**San Francisco, Cal.**—City Engineer Marsden Manson has prepared plans for the construction of sewers in the Parkside section of the city; the entire system will require more than 70,000 feet of pipe.

**Willows, Cal.**—The town votes November 3 on issuing \$30,000 of bonds for constructing sewer system.

**Holly, Col.**—The proposed sewerage system will cost \$20,000.—Engineers, W. K. Palmer Engineering Company, of Kansas City, Mo.; N. F. Vidal, Town Clerk.

**Hartford, Conn.**—Council has passed an ordinance for constructing public sewer in Greenfield street and through private lands as follows: Commencing at northerly end of the Albany avenue sewer, to the center line of Greenfield street, 67.6; thence westerly in Greenfield street about 430 feet to elevation 69.8, all to be of vitrified tile 12 inches in diameter; manholes and connections to be as the City Engineer shall direct.

Residents of Pleasant street have asked an appropriation of \$2,000 for the construction of a sewer.

**Plainville, Conn.**—A movement is on foot looking to the construction of a sewerage system.

**Aurora, Ill.**—The Downer Place Improvement Association has been formed, with A. B. Conklin as President, for the purpose of securing civic improvements in the way of water and sewer connections and pavements in that section of the city.

The City Engineer will shortly prepare plans for sewers for that section of the city east of Jackson street and south of Second avenue; the sewers will cost about \$40,000, and will be built next spring.

**Bloomington, Ill.**—Council has passed an ordinance for a sewer on Hinshaw avenue between Aqueduct and Chestnut streets, and on Chestnut street between Hinshaw avenue and Western avenue.—C. F. Fauntz, City Engineer.

**Carlinville, Ill.**—Council has adopted ordinance for constructing 20-inch sewer in Oak street.

**Chicago, Ill.**—Residents of Maywood have complained to State Board of Health that sewage in the Desplaines River at that point has become offensive and a menace to health. Jacob A. Harmon, Peoria, Ill., Sanitary Engineer of the Board, is investigating the matter.

**East St. Louis, Ill.**—Council has passed bill providing for the building of the proposed new outlet sewer, to cost about \$740,000.—W. J. Crocker, City Engineer.

**Galesburg, Ill.**—Council has passed ordinance for the construction of sanitary sewer in West Second, Cedar and other streets; cost, \$5,006.74.—F. M. Connolly, Engineer of Board of Local Improvements.

**Marshall, Ill.**—The Board of Public Im-

provements is to construct sewer in east side of city.

**Peoria, Ill.**—Members of the Committee on Sewers are considering a petition from Drs. Hogan and Zimmerman asking that the city provide them with a sewer from Court street to their lot in the rear of the Heckman & Jacobs store.

**Silvis, Ill.**—Work will shortly start on the construction of three miles of 15-inch pipe sewer.—J. W. Walsh, Village President.

**Fort Wayne, Ind.**—Permission has been granted to the Board of Public Works to proceed at once with the building of a storm sewer in Nebraska street.

**Greenfield, Ind.**—The construction of a sewer in South State street is under consideration.

**Princeton, Ind.**—Council has again taken up matter of installing sewer system.

**Council Bluffs, Ia.**—Council has ordered construction of sewers 10 inches in diameter on Avenue D from Eighth street to Ninth street; 12 inches in diameter, on Avenue D from Ninth street to Tenth street; 15 inches in diameter on Avenue D from Tenth street to Twelfth street; 15 inches in diameter on Twelfth street from Avenue D to Avenue C; 8 inches in diameter on Kappel avenue from Madison to Charles street; 10 inches in diameter on Benton street from Broadway to Indian Creek; 15 inches in diameter on Harrison street.—A. W. Casady, City Clerk.

**Grundy Center, Ia.**—Sewer resolutions are now being drawn up, and as soon as this is completed Council will advertise for bids for the construction of the proposed sewer system.

**Wall Lake, Ia.**—The village is considering the matter of installing a sewerage system.

**Salina, Kan.**—Council has decided to put in 8,000 feet of additional sewers.

**Lowell, Mass.**—The Council Sewer Committee has asked \$10,000 appropriation for sewer construction and has recommended that sewer be laid in Merrimac street.

**Meridian, Miss.**—City Engineer W. G. Wetmore has completed plans for sewers in certain streets.

**Joplin, Mo.**—The Board of Education has decided to construct a sewer to the Garfield School at the corner of Second street and Gray avenue.

**Nevada, Mo.**—A petition was offered in Council asking for the establishment of a sewer district embracing the property of the signers and to provide for sewerage for the same by lowering and extending district sewer No. 6, located in the southwest part of the city.—J. M. Clark, City Engineer.

The Sewer Committee filed a report recommending that the boundary of sewer district No. 15 be changed so as to comprise lots 5, 6, 7, 8, 9, 10, 11, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 and 25, all in Cummings addition. A remonstrance against the ordinance for the building of a district sewer on West Ashland street, was filed with Council.

**Great Falls, Mont.**—Council is considering building new sewer in De Mers avenue.

**Havelock, Neb.**—The proposition of issuing bonds for sewer system will be submitted to a vote of the people.

**Portsmouth, N. H.**—Council has voted to call for bids for the construction of the proposed concrete sewer on Richards avenue from Lincoln avenue to Parrot avenue.

**Jersey City, N. J.**—The Board of Finance has appropriated funds for the completion of the sewer in Division street.

The Board of Finance has appropriated \$35,596 to rebuild the brick sewer partially destroyed while the work of installing the new 8-foot relief sewer draining the Hill section was in progress; plans will be prepared forthwith and the work commenced immediately after the specifications have been advertised and the sewer building contract awarded; Henry Byrnes has the curbing contract now, but he has been unable to proceed with the work pending the completion of the sewer repairs.

**New Brunswick, N. J.**—A 15-inch sewer is to be laid on George's road and Sandford street.

**Wenonah, N. J.**—The Borough is considering the proposition of purchasing the sewer system of the town and extending the service to all streets.

**Binghamton, N. Y.**—John A. Giles, City Engineer, is preparing plans for an 8-inch tile sewer in Mill street, beginning at end of present sewer and extending south for 630 feet; also for an 8-inch sanitary tile sewer in South Mozart street for a distance of 745 feet. Bids will soon be called for by D. C. Herrick, City Clerk.

**Brooklyn, N. Y.**—The Board of Estimate has passed resolutions for the laying of sewers in a number of streets, including Forty-sixth street, Seventeenth avenue, Sterling place between Utica and Schenectady avenues, Seventy-fifth street between Tenth and Eleventh avenues, and Sixtieth

street between Sixteenth and Seventeenth avenues.

**Buffalo, N. Y.**—Francis Ward, Commissioner of Public Works, has recommended that the Council take steps to build an adequate outlet for the Hertel avenue trunk sewer, so that it will not flow into Cornellus Creek; probable cost of work, \$159,000.

Health Commissioner Wende has recommended the construction of a sanitary sewer in Barnard street; the matter has been referred to the Committee on Sewers of Council.

**East Rochester, N. Y.**—Village has voted to purchase sewer system of the Despatch Sewer Company for \$35,000, and to expend \$10,000 in extending the system.

**Ithaca, N. Y.**—The Sewer Commission has been petitioned for the extension of the sewer lines from Oneida place to Maple avenue. Sewer Superintendent Stewart was instructed to build a sewer 160 feet south of Oneida place.

**North Tonawanda, N. Y.**—Representatives of residents along the Niagara frontier interested in creating a canal that will take care of the sewage of Buffalo, the Tonawandas, Lockport and Niagara Falls, have held a meeting here. Among those interested are George Sheehan, W. Whitehead and James S. Simmons, of Niagara Falls; Thomas McGrath, Dr. C. M. Palmer and Judge Charles Hickey, of Lockport.

**Poughkeepsie, N. Y.**—A communication was read in Council from the Board of Health, recommending the extension of the sewer system in Albany street from Mill to Duchess avenue, and from Albany street to Cataract place.

**Rochester, N. Y.**—Council recently held hearing in regard to construction of a sewer in North Water street, to cost \$25,000.—William Ward, City Clerk.

**Schenectady, N. Y.**—Council is considering securing site for a sewage disposal plant and the preparation of plans for its erection. The State Board of Health has required that the city secure site by June, 1909, and have the plant in operation two years later. It is estimated that the plant will cost about \$750,000.

**Troy, N. Y.**—Council has passed resolution for the construction of a vitrified drain pipe sewer in Twenty-fourth street, east of the east line of Sixth avenue, from the terminus of the sewer now laid in that street.

Council may provide for the construction of public sewer of vitrified drain pipe of a size to be determined by the City Engineer, in Mechanic street and in the alley between Mechanic and Thompson streets, from Hopkins street to Howard street.

**Waverly, N. Y.**—Village has secured permit to lay temporary sewer preparatory to construction of a general sewer system.

**Akron, O.**—A resolution has been adopted declaring it necessary to construct a sewer in Maple street from the end of the present sewer in that street to the Diagonal road.

**Ashtabula, O.**—The City Engineer has completed plans for sewerage system in district No. 3.

**Bellaire, O.**—A petition for a sewer on Quernsy street from a point about 75 feet above Forty-eighth street to connect with the sewer at Forty-ninth street has been referred to the Board of Public Service.

**Bowling Green, O.**—The Council and Board of Public Service of Bowling Green were before the State Board of Health recently to show cause why they should not build a sewage purification plant in that town; the State Board resolved to recommend to the Attorney General that the town be instructed to erect the plant at once.

**Celina, O.**—This city is considering the question of disposing of its sewage.

**Circleville, O.**—The city will vote October 6 on installing sanitary sewer system.

**Dayton, O.**—Councilman Zehnder has requested the Engineering Department to rush plans for the storm water intercepting sewer in North Dayton; estimated cost, \$18,000.

**Elyria, O.**—The Board of Health has recommended to the Board of Public Service that the small creek south of Ridge street be converted into a closed sewer.

**Ironton, O.**—The Board of Public Service will have the City Solicitor make an estimate of the cost of constructing a sewer on Ninth street between Chestnut and Walnut streets; the Board will also consider the draining of Tenth and Vine streets.

**Logan, O.**—Bids will be received October 12 for the purchase of \$7,000 4 per cent. sewer bonds.—F. C. Grove, Village Clerk.

**Niles, O.**—A resolution has been passed authorizing and directing the Board of Public Service to furnish the necessary sewer pipe of proper dimensions to be laid in and through the Burns property.

**Oakwood, O.**—Bonds of \$2,500 are issued for the construction of storm water sewers and the necessary branches and connec-

tions on Oakwood avenue between the north corporation line of the village and the southerly side of Far Hills avenue.

**Oxford, O.**—Contractors are figuring on the construction of the proposed sanitary sewer system for this town.—P. D. Featon, Clerk.

**Salem, O.**—Engineer L. E. Chapin, of Canton, has been instructed to prepare plans for a new water system.

**Toledo, O.**—Council has passed ordinance for construction of cylindrical pipe sewer 15 inches and 12 inches inside diameter, together with the necessary manholes, catch basins, flush holes, house branches, appurtenances, etc., on Stillman and White streets and Navarre avenue.

Council has ordered construction of a vitrified pipe sewer 12 inches and 10 inches inside diameter, with the necessary manholes, flush holes, house branches, catch basins, appurtenances, etc., between Peoria street and Cone street.

**Sylvania, O.**—W. B. Harris, City Clerk, writes that Riggs & Sherman, of Toledo, are preparing plans for the proposed sewerage system.

**Zanesville, O.**—Efforts will be made at once to have the city sewer 700 feet to connect the new sewer being built by the Greenwood Realty Company with that built by the Wayne Township residents of that street.

**Muskogee, Okla.**—A new election will be held to establish the legality of \$550,000 sewer and water bonds, recently authorized.—Address Mayor Martin.

**Newkirk, Okla.**—The Town Council has plans under consideration for the establishment of a sanitary sewer system.

**Tulsa, Okla.**—Council has approved plans of City Engineer Hughes for building storm sewers, to cost about \$18,000.

Bids will be received until October 12 by O. P. Jones, City Clerk, for \$30,000 sewer bonds.

**Woodward, Okla.**—The matter of establishing a sewerage system in this town will shortly be taken up by Council.

**Brownsville, Ore.**—Council has decided to construct a sewerage system in the business section of city; probable cost, \$4,000.

**Brackenridge, Pa.**—Bids for the construction of storm sewers were rejected.—J. C. Smith, M. D., Chairman Street Committee.

**Chester, Pa.**—The Sewer Committee of Council is planning a new sewerage system; an expert Sanitary Engineer will be engaged.

Council has planned to have a Sanitary Engineer prepare plans and work out a system to dispose of sewage so that it will not be dumped into the river so near the water in-take pipe. This would not take over two months, and after approval by the State Board the city could go on and construct sewers accordingly.

**Elwood City, Pa.**—Council is considering an ordinance for the construction of a public sewer on Sixth street from Wayne to Division avenue.

**Harrisburg, Pa.**—City Engineer Cowden has had a long conference with State Health Commissioner Dixon and Chief Engineer Snow relative to the plans for sewage disposal for Harrisburg.

Select Council Bill No. 106, for a sewer from the present mouth of Upland street to the Delaware River, has been adopted; also Select Council Bill No. 17, for a sewer from the mouth of Welsh street to low water mark in the Delaware River.

**Lebanon, Pa.**—The Cumberland Street Sewer Company has been organized here to construct an 18-inch storm sewer in Cumberland street; bids are to be asked at once.—George W. Hayes, Engineer.

**Marcus Hook, Pa.**—Ordinance has been before Borough Council providing for a \$40,000 loan for the construction of a sewer system and disposal plant and for improving the streets.

**Philadelphia, Pa.**—Septic tank system of sewage disposal will probably be installed at new municipal hospital at Second and Luzerne streets.—Philip H. Johnson, Architect.

**New Castle, Pa.**—Ordinance is before Councils for new sanitary sewer for Preston avenue.

**Washington, Pa.**—At the direction of Council, bonds to the amount of \$30,000 will be issued for the completion of the sewage disposal plant now under course of erection; the bonds were placed in the hands of N. W. Harris & Co., of Cleveland, will bear interest at 4½ per cent., and will be free of tax.

**West Chester, Pa.**—Special election is to be held December 1 to vote on borrowing \$150,000 for constructing new sewer system and sewage disposal plant.

**Wormleysburg, Pa.**—The three Boroughs of Wormleysburg, Lemoyne and Camp Hill have organized to construct a sewage disposal system.

**Nashville, Tenn.**—Mayor James S. Brown, in a special message to the City Council, urged that immediate action be taken for



the construction of lateral sewers. The total cost is estimated at \$207,000.—W. W. Southgate, City Engineer.

**Arlington, Tex.**—The question of constructing a sewerage system is under consideration; probable cost, \$20,000.—Alderman F. R. Wallace, Chairman Sewer Committee.

**Houston, Tex.**—City Council has passed an ordinance ordering the holding of an election October 22 to determine whether or not the citizens shall authorize the issuance of \$700,000 in municipal bonds, to be apportioned as follows: Storm sewers, \$225,000; sanitary sewers, \$225,000; water mains extension, \$100,000; ship slips, etc., \$150,000.

**Provo, Utah.**—Ordinances have been passed by Council creating sewer districts Nos. 8 and 9.

**Burlington, Vt.**—A resolution has been adopted by the Board of Aldermen to authorize an issue of \$51,000 in bonds for the installing of a filtration plant.

**Charleston, W. Va.**—Council has passed thirty-eight ordinances for new sewers.

**Parkersburg, W. Va.**—Council has passed an ordinance for the construction of a storm sewer from Murdoch avenue, on Stout street, to the street car tracks.

**Ashland, Wis.**—The City Engineer has been directed to outline plan for sewer to reach Bay City School on Eleventh avenue east.

**Milwaukee, Wis.**—Residents of the Seventeenth Ward are petitioning for the construction of sewers which are necessary to prevent the annual flooding in the spring of a large section of that district, resulting from inadequate drainage.

**Oconomowoc, Wis.**—Council has received petitions for construction of sanitary sewers in Church street and in South street from Elm street to Worthington street.

**Stevens Point, Wis.**—All bids recently received for 3,000 feet of sewers have been rejected.

**West Allis, Wis.**—An ordinance has passed Council for an issue of \$90,000 bonds for the construction of sewers, septic tanks, filter beds and sewage disposal plant. The bonds will probably be sold in November.—Fred Schneider, City Engineer, 468 Washington street, Milwaukee; L. F. Fish, City Clerk.

**Chihuahua, Mex.**—Plans and specifications will shortly be made for the general improvement and extension of the sewer and water systems.

**St. Petersburg, Russia.**—St. Petersburg is to have a new sewerage system, and Premier Stolypin, in charge of the cholera situation, is promoting the new scheme, the estimated cost of which will be \$40,000,000. Already leading members of the Douma have given assurance that that body will appropriate half of this amount, as it is impossible for the city alone to meet the tremendous cost. Government Engineers have started to work on plans for the system. They involve a complete line of drains over the entire city, by which the city's sewerage will no longer be emptied into the Neva and the open canals that run through the city and from which the city now draws its water supply.

## WATER SUPPLY

**Athens, Ala.**—Steps will be taken at once to increase the water supply of this town.—Address the Mayor.

**Luverne, Ala.**—Estimates are being prepared for water works for which bonds have been authorized.

**Bisbee, Ariz.**—Special election will be held October 24 to vote on issuance of \$230,000 bonds for improving the roads of the city, and improving the water works system.

**Mesa, Ariz.**—Two bids for water works bonds were received by Council, these being from S. A. Keene & Co., of Chicago, whose bid amounted to \$51,125, and the Mesa City Bank for \$51,250; neither was accepted by Council.

**De Queen, Ark.**—A petition has been presented to Council looking to the construction of water works.

**Marvell, Ark.**—N. W. Green, Civil Engineer, is making surveys and estimate cost for a system of water works.

**Huntington Park, Cal.**—Citizens are discussing advisability of a municipal water plant.

**Madera, Cal.**—The Board of Trustees have decided to call a special election to vote on issue of bonds for the installation of a water and sewer system.

**San Diego, Cal.**—Superintendent Simmons, of the Water Department, has been authorized by the Board of Public Works to purchase all fittings necessary for the installation of the Third street water main from A street to the water front.

**Windsor, Conn.**—The Matter of better water supply for the section of the town near Poquonock street will be agitated.

**Washington, D. C.**—The annual estimates

for the care and maintenance of the Washington aqueduct and filtration plant and the new Highway bridge across the Potomac River have been submitted to the Commissioners by the Secretary of War; the estimates are: Washington aqueduct, \$39,000; Washington aqueduct and filtration plant, \$190,640, and for repairs and improvements at the Highway bridge, \$16,000. Included in these estimates is an item providing \$9,000 for remodeling the Georgetown reservoir and for the preliminary treatment of the Potomac River water by means of coagulation; the construction of a slow sand filtration plant at that point, estimated to cost \$90,000, is also recommended.

**Palmetto, Fla.**—The town will soon install a system of water works.—E. F. Wilson, Mayor.

**Tampa, Fla.**—The Tampa Water Works Company will increase its indebtedness to \$1,000,000 for improving and extending water works system.

**Athens, Ga.**—Plans for enlargement of local water works plant have been prepared.

**Augusta, Ga.**—The city contemplates installing an auxiliary steam pump, to cost between \$60,000 and \$75,000.

**Butler, Ga.**—Estimates are being prepared for water system.—Address W. E. Steed.

**Decatur, Ga.**—City has voted to issue \$30,000 of bonds—\$15,000 for water works purposes and \$15,000 for schools.

**East Point, Ga.**—October 28 the citizens will vote on issuing \$85,000 bonds for establishing water and sewerage systems.

**Macon, Ga.**—The committee appointed by Mayor Miller from Council, and the committee from the citizens, to take up the question of the city owning its own water works and its own lighting plant, met and appointed the following to investigate the cost of erecting a new water works plant and to estimate the value of the present plant: Ben L. Jones, Chairman; C. A. Caldwell, J. W. Snow, W. A. Taylor, L. B. Rhodes. This committee will be assisted by City Engineer J. W. Wilcox.

**Pocatello, Ida.**—This town will install a water works system.

**Pekin, Ill.**—Plans have been submitted to the Water Works Commission for new water works for the city.

**Rockford, Ill.**—Plans are being considered by the Rockford Water Power Company for the construction of a concrete dam to replace the present one at this point, or to repair the leaks in it. In the former case an expenditure of \$100,000 would be entailed, while reconstruction of the old one would amount to from \$25,000 to \$30,000. Among those interested in the project are George D. Roper and Charles S. Brantingham.

**Silvis, Ill.**—Village Board, J. W. Walsh, President, is considering erecting stand pipe.

**Warsaw, Ill.**—Water works to cost \$25,000, are to be installed.

**Columbus, Ind.**—The city contemplates constructing filter plant and is now making tests for same.

**Madison, Ind.**—The city will have a new pure water supply by the Ohio River sand-bar filtration system.

**Morgantown, Ind.**—The Morgantown Light and Power Company, recently incorporated, will ask for bids soon for the construction and equipment of a light and power plant.

**Grinnell, Ia.**—Council has decided to sink a well at a cost of \$8,000.

**Lake Park, Ia.**—The city will vote on issuing \$6,500 of bonds for constructing water works.

**Persia, Ia.**—The proposed water works will cost about \$5,500.—Chas. Purnell, City Clerk.

**Waverly, Ia.**—The water and light plants of this city, both housed in the same building, have been destroyed by fire, causing a loss of \$30,000.

**Winterset, Ia.**—Specifications are being prepared for \$60,000 water system, for which bonds will be issued.

**Argentine, Kan.**—The Fire and Water Board of Kansas City, Mo., has decided to furnish Argentine with a water supply. It is proposed to lay a feed line from Turkey Creek pumping station in Kansas City, Mo., to connect with the distributing mains in Argentine.—W. C. Goodwin, Chief Engineer Water Works, Kansas City, Mo.

**St. Marys, Kan.**—The citizens have voted to issue \$47,000 bonds for the construction of water works. Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., are Engineers.

**Wichita, Kan.**—The question of whether the city is to vote on bonds to the amount of \$850,000 for the construction of a city water plant is to be submitted at the election, November 3; estimates for the new system have been prepared.

**Madisonville, Ky.**—Council is making arrangements looking to the construction of water works and a sewerage system.

**Newport, Ky.**—The report of the Ways and Means Committee relative to the issuance of \$100,000 worth of bonds for the

improvement of the city water works was referred to committee of the whole in the Board of Aldermen.

The Board of Trustees of the Clifton District have passed a resolution to have a vote taken on the \$12,000 bond issue for constructing water mains, fire plugs, etc., in the district.

**Shelbyville, Ky.**—Consulting and Contracting Engineers Holmboe Company, Lincoln Savings Bank Building, Louisville, have plans for improvements to water works, at Shelbyville, which will consist of an impounding reservoir, to hold about 30,000,000 gallons of water, and open sand filters, with necessary piping, etc.; approximate cost, \$10,000.

**Shreveport, La.**—The city may build large reservoir.

**Old Orchard, Me.**—The Biddeford and Saco Water Company has received a 20-year contract to supply Old Orchard with water; a standpipe and tank with 600,000-gallon capacity will be established.

**Boston, Mass.**—Guy C. Emerson, Superintendent of Streets, invites parties having street lighting apparatus adapted to system other than the present system of low pressure gas mantles to demonstrate, if they so desire, during the continuance of the present contract for street lighting, with a view to the improvement of the present system upon the expiration of the present contract on September 15, 1909.

**Easthampton, Mass.**—A plan is on foot to establish a pumping station to utilize the waters of the wells in Hendrick st., of which there are twenty-three.

**Norway, Mich.**—Chas. B. Burdick, of Chicago, has been appointed to supervise the construction of water system.

**Pontiac, Mich.**—The City Engineer is preparing plans for a reservoir at the city water works plant; a filtration plant is also being considered.

The establishment of a meter system is being urged by many citizens.

**West Branch, Mich.**—Water works are to be installed.

**Two Harbors, Minn.**—Council is considering establishing a water meter system.

**Virginia, Minn.**—The Virginia Light and Water Company will put in its own steam plant, consisting of a brick power house, two 200-h.p. boilers and a 500-gallon pump.—Address Secretary.

**California, Mo.**—Engineers Burns & McDonnell, Scarritt Building, Kansas City, Mo., are preparing plans and will receive bids in about thirty days for a water works system for the city of California; cost, \$55,000.—Edw. C. Nischwitz, Mayor.

**Kansas City, Mo.**—The improvements contemplated to the water system include wall of masonry around Quindaro pumping station; revetment of river bank to protect intake; additional storage capacity at Quindaro, and new pumps at Turkey Creek station.—W. G. Goodwin, Chief Engineer Water Department; F. S. Groves, Chairman Fire and Water Commission.

**Louisiana, Mo.**—The Louisiana Water Company will extend its water mains on Tennessee street and on Buffalo street.

**Great Falls, Mont.**—The Cottonwood Coal Company will lay a water main from Wolf Creek to Windham, the new coal town on the Billings & Northern Railway, a distance of 20 miles.

**Auburn, Neb.**—The question of constructing water works, also new sewers, is under consideration.

**Crofton, Neb.**—October 3 bids will be received for labor and material necessary to construct water system.—Address F. A. Barker, Village Clerk.

**Hastings, Neb.**—An order has been given by Council for an extension of water main in High street from Colorado avenue to the Seventh Day Adventists' sanitarium, which is now nearing completion; ultimately the main will be extended beyond the sanitarium to Elm avenue; the cost of laying the main from Colorado avenue to the sanitarium will be between \$1,500 and \$1,800; the distance is approximately 2,000 feet.

**Hebron, Neb.**—Council has under consideration ways and means of extending water system.

**Pioche, Nev.**—The Pioche Water Company, Ernest L. Godbe, Manager, is preparing to improve its water system; old mains will be replaced and two new tanks of 200,000-gallon capacity will be constructed.

**Bayonne, N. J.**—The Committee on Water, Streets and Drainage has been authorized to purchase the following supplies, to be used in the Water Department, not to exceed the following prices: three 6-inch side cut tapping gates, each \$18; twelve wood frame gate boxes, \$40; one set of harness; one set of Mueller calking tools, \$11.40; three 6-inch cast-iron caps, 4 cents per pound; one 13½-inch lead melting pot, \$3.; one ¼-inch drill, \$3; 205 2¼-inch bolts, \$.90; 100 hydrant stuffing box screws, \$.85; one dozen batteries, \$2.88; one dozen pick handles, \$2.25; four wrenches, \$1.40; repairing six picks, \$1; 50 bolts, \$3.50; one dozen

charts, one album for pressure gauge; 100 reducers, \$1.50; 1,200 washers, \$2.98. The Committee has also been empowered to place a 10-inch water gate on 10-inch water main running along railroad near Plant No. 2, Standard Oil Company.

**Trenton, N. J.**—The Board of Water Commissioners has received petitions for the laying of small water pipes on Chambers street, Barnes, Morris and Hamilton streets.

**East Rochester, N. Y.**—Village has voted to purchase water works system of Despatch Water Company, for a sum not to exceed \$105,000.

**Marcellus, N. Y.**—New York State Water Supply Commission has approved plans of Village Board for a water works system; village voted to bond for \$20,000 for the plant.

**Seneca Falls, N. Y.**—The Seneca Falls Water Works Company, H. A. Carmer, Manager, is reported to be considering the question of improving its plant and has engaged W. G. Stone, of Utica, and Emil Knichling, of New York City, to prepare plans for rehabilitating the system.

**Sherman, N. Y.**—The citizens have voted to issue \$20,000 bonds for water works.

**Syracuse, N. Y.**—Consulting Engineer Howard Soule, 828 James street, has completed plans and specifications are being prepared for the second Skaneateles lake water conduit; plans have been approved by Geo. H. Beebe, Chief Engineer and Superintendent Bureau of Water, and bids will be called for by the Board of Public Works in about two weeks; estimated cost, \$450,000.

**Troy, N. Y.**—The Water Works Committee of the Board of Trustees has decided to construct a new pipe line to be about 100 feet long.

**Webster, N. Y.**—Consulting Engineers Knight & Hopkins, Rome, have been retained to prepare plans for a gravity water works system for the village of Webster; source of supply, artesian wells, about one mile distant from city.

**Glen Ullin, N. D.**—County Surveyor Harmon, of Mandan, is preparing plans for water works.

**Towner, N. D.**—Council offers for sale \$75,000 water bonds.—Address H. H. Thompson.

**Alliance, O.**—A contract between Engineer L. E. Chapin and the Board of Service has been agreed upon; Mr. Chapin is to prepare plans and specifications and an estimate of the cost for the proposed changes in the water system, the cost of the plans not to exceed \$500.

The Superintendent of the Water Works has been instructed to lay water mains on Oxford street west of Mechanic.

**Cleveland, O.**—Council has passed ordinance for purchase of land for site for proposed \$600,000 high level reservoir.

**Eaton, O.**—J. W. Hill, of Cincinnati, the water works expert, who built the new water works plant for Hamilton, has been engaged by the Board of Public Service to superintend the construction of the new plant in that city; the cost will be approximately \$12,000.

**Findlay, O.**—The City Water Works Department is considering extending water mains to the Firmin, Detweiler and Strother schools.

**Girard, O.**—Robt. H. Fothergill, promoter, who has the local water works franchise, is making preparations for the construction of a reservoir of concrete construction.

**Minerva, O.**—Bids will be received, October 14, for the purchase of \$3,500 5 per cent. water works extension bonds.—Austin H. Fred, Village Clerk.

**Orville, O.**—Plans have been prepared by Council for the extension of water mains to every part of the city.

**Piqua, O.**—The Board of Public Works will extend the intake pipe.

**Springfield, O.**—The city will probably take up matter of installing water meter system. George Cotter is Superintendent of Water Works; estimated that city could be metered for about \$60,000.

**Warren, O.**—The Trumbull and Mahoning Electric Company, which contemplates constructing a dam across the Mahoning about two miles above the present water works dam, has been organized; the company plans to ask a franchise for light and power in Warren.

Dissatisfied with the service provided them by the Butler Water Company, the residents of the Fourth Ward have taken steps to organize a company of their own; wells will be drilled and they will secure a water supply of their own.

**Westerville, O.**—The Board of Public Works proposes to establish a meter system.—Frank Alexander, President of the Board.

**Youngstown, O.**—The Mahoning Valley Water Company has applied for a franchise for permission to lay pipes from Lake Hamilton on Yellow Creek to the East End bridge.

**Zanesville, O.**—The Riggs-Sherman Com-

pany, of Toledo, has prepared plans for improving the water works.

**Wellston, Okla.**—A committee has been appointed with J. H. Kenney as chairman, to investigate question of constructing water works.

**Ashland, Ore.**—Bids will be received, October 15, for the purchase of \$47,500 4½ per cent. light and water bonds, and \$30,000 4½ per cent. city improvement bonds.—M. F. Eggleston, City Recorder.

**Enterprise, Ore.**—The city has voted to issue \$30,000 of bonds for installing gravity system of water works.

**Altoona, Pa.**—Ordinance presented by Mr. Roberts for special election for purpose of increasing the indebtedness of Altoona in the sum of \$300,000 for work on Lake Altoona, referred to proper Council committee.—C. W. Knight, Engineer.

**Beaver, Pa.**—The College Hill residents have decided that the electric light plant which was wrecked by the explosion of the boilers some time ago, should be rebuilt by the borough and that it should continue under municipal ownership. The proposed plant will cost \$15,000, and full equipment, including boilers, dynamos, generators, switchboards, etc., will be required.—James Harper is Surveyor.

**Freeport, Pa.**—A communication from the State Board of Health to the Freeport Water Company approves the plans for the new filter; the water will be pumped direct into the basin and after being settled will be run into the tanks and served from these to the consumer.

**Harrisburg, Pa.**—James H. Fuertes has been commissioned to draw plans for a filtration plant for the Riverton Consolidated Water Company, which supplies a large number of towns along the west shore of the Susquehanna River.

Ordinances passed by Council authorizes the Water Commissioners to lay an 8-inch water pipe in Holly, from Eighteenth to Norwood street, and 6-inch water pipe on the following streets: Burchfield, from Rudy to the Jonestown road; Yale, from Rudy to the Jonestown road; Nineteenth, from Rudy to the Jonestown road; Twentieth, from Rudy to the Jonestown road; Norwood from Rudy to Holly, and Spencer avenue from Delancy avenue to the city limits at Norwood street.

**Riverton, Pa.**—James H. Fuertes, Consulting Engineer, 140 Nassau street, New York, is preparing plans for a filtration plant for the Riverton Consolidated Water Company.

**Scottdale, Pa.**—The Citizens' Water Company is preparing to lay a 4-inch water main in the town of West Scottdale.

**Scranton, Pa.**—The Scranton Gas & Water Company has decided upon the installation of an extensive and expensive filtration system for Nos. 7 and North Scranton water supply systems; a new reservoir will also be built.

**Sharon, Pa.**—Sharon Water Company is endeavoring to secure a franchise to furnish Hubbard, Petroleum and Masury with water.

**Yankton, S. D.**—The citizens have voted to issue bonds for the construction of water works; probable cost, \$100,000.—Edmund Sykes, Minneapolis, Minn., Engineer.

**Ennis, Tex.**—It is the intention of Council to secure an adequate supply of artesian water for all purposes, and a bond issue is soon to be voted on to determine whether the city shall install a system of water works.

**Fort Worth, Tex.**—Commissioner Davidson, by a motion unanimously adopted, has challenged the Houston firm, which has written T. J. Powell that it could get plenty of artesian water for Fort Worth, to back up its talk with money and to enter into a contract with the city.

**Quannah, Tex.**—Plans are under way for establishment of a water system; bids for the construction of same will be called for at an early date.—Address the Mayor.

**Sherman, Tex.**—The citizens, on September 19, voted to issue \$16,000 bonds for electric light improvements and \$14,000 bonds for water works extensions; bids for bonds will be received October 19. Engineer, P. C. Thurmond, of Sherman; C. E. Craycroft, Mayor; Henry Zimmerman, City Secretary.

**Sweetwater, Tex.**—Engineers Burns & McDonnell, Scarritt Building, Kansas City, Mo., are preparing plans and will receive bids in about 60 days for a water works, light and ice plant; cost, \$60,000.

**Lehi, Utah.**—The citizens have voted \$26,000 bonds for water works purposes.

**Aberdeen, Wash.**—Council has accepted the report of the special committee favoring the construction of a reservoir, to cost about \$18,600, including a site.

**Quincy, Wash.**—An election will probably soon be held to vote on issuing \$8,000 bonds for the construction of water works.

**Parkersburg, W. Va.**—Plans are under way for installation of a \$50,000 water plant.

**Wausau, Wis.**—An ordinance is before Council requiring the use of water meters.

**Wilton, Wis.**—The citizens will vote on the question of issuing \$10,000 water works bonds.

**Toronto, Ont., Can.**—Allen Hazen, of New York City, estimates the cost of constructing the proposed filtration plant at \$750,000, with a daily capacity of 48,000,000 gallons.

**St. Petersburg, Russia.**—Plans are on foot to bring the city's water supply from Lake Lagoda, twenty miles distant. The waters of the lake are pure and the city authorities are being charged with criminal negligence in not having utilized it long ago; \$40,000,000 is to be expended for sewerage and water.—Address Premier Stolypin.

## LIGHTING AND POWER

**Livingston, Ala.**—A company will be formed to install electric light plant; 500 lights; gas generator; concrete building.—C. H. Brooks, Cuba, Ala., Engineer in Charge; T. B. Smith, Mayor.

**Napa, Cal.**—The Board of Supervisors has granted to E. D. N. Lehe, of Dixon, a fifty-year franchise to erect and maintain an electric light, power and heat line from the northerly boundary of the City of Napa to the southern boundary line of Lake County. The system will be strictly rural, and will not extend into any city or town in the county.

**Ashburn, Ga.**—Bonds, \$50,000, for putting in electric lights and water works, have been sold and the contract let for work to J. B. McCrary, of Atlanta.

**Butler, Ga.**—Arrangements are being made to establish an electric light plant and water works.—Address Walter E. Steed.

**Decatur, Ga.**—The citizens have voted \$30,000 bonds for the erection of school and improvement of electric light plant.

**Lavonia, Ga.**—A company is being formed with \$15,000 capital to establish a lighting and power plant.

**Macon, Ga.**—A committee consisting of the following gentlemen has been appointed by the Mayor to investigate the cost of erecting a street lighting plant: A. E. Chappin, Chairman; O. P. Willingham, W. T. Morgan and C. P. Adams.

The City Electrician wants an appropriation of \$300 with which to pay for a new switchboard for the new repeater he has just placed in position.

**Sandpoint, Ida.**—Council has passed an ordinance granting George Hopke, Manager of the Humbird Lumber Co. store, the right to operate a water system and supply electrical power.

**Chandlersville, Ill.**—The Village Trustees have rejected all bids for installing an electric light plant; the plans and specifications did not include the building of a power house, and this with the wiring for commercial lights and other incidentals would cost the town at least an additional \$1,500, thus bringing the cost of the plant, figuring on the lowest bid, to \$6,842; funds to this amount are not available and it was decided by the Board that the only procedure open for it was to reject all bids.

**Anderson, Ind.**—The \$5,000,000 corporation recently organized in New York as the Indiana Gas and Light Company for the purpose of absorbing the gas and lighting plants in the cities of Eastern Indiana, has opened negotiations for the purchase of the plant of the Union Gas, Light and Fuel Company, of this city.—W. E. Hutchinson, President.

**Danbury, Ia.**—Bonds, \$7,000, have been voted for a lighting plant.

**Muscataine, Ia.**—W. L. Roach, President of the Roach & Musser Sash & Door Co., is interested in the Independent Power Co., organized to develop electric power; 20,000 horsepower is to be developed; \$2,000,000 in bonds will be issued.

**Waverly, Ia.**—The municipal light and power plant has been destroyed by fire; loss, \$50,000.

**Anthony, Kan.**—The Citizens' Improvement Company will install a 150-kw. machine and 200-h.p. engine.—W. A. Miller, Manager.

**Ellinwood, Kan.**—The city contemplates the construction of a lighting system.

**Ellis, Kan.**—The city will soon vote upon the question to construct an electric light plant; W. K. Palmer Company, 718 Dwight Building, Kansas City, Mo., have been engaged as consulting engineers to design and install this work.

**Manhattan, Kan.**—Council has granted a franchise to W. R. West and son, Joseph T. West, of Kansas City, for an electric railway system to be built in this city; Council has granted a 20-year electric light franchise to J. C. Hessin, Prof. B. F. Eyer, E. A. Wharton and H. P. Wearham, a new company, which recently purchased the old plant.

**Moundridge, Kan.**—Engineers Burns & McDonnell, Scarritt Building, Kansas City, Mo., are preparing plans for an electric light plant for the city.

**Russell, Kan.**—Engineers Burns & McDonnell, Kansas City, Mo., are preparing



plans for an electric light plant for the city.

**St. Marys, Kan.**—Engineers Burns & McDonnell, Scarritt Building, Kansas City, Mo., are preparing plans and will receive bids in about thirty days for an electric light plant for the city, to cost \$15,000.

**Virginia, Minn.**—The Virginia Light and Water Company has decided to install a steam plant, consisting of a brick power house, two 200-h.p. boilers and a 500-gallon pump.

**Meridian, Miss.**—Wm. G. Wiles, Engineer and Manager of the Meridian water works, will prepare plans for the street lighting plant; estimated cost, \$60,000.

**St. Louis, Mo.**—The West End Light and Power Company, which now owns the franchise granted Browning, King & Co., on March 15, 1884, and which has never been used, filed a bond for \$20,000 as a guarantee that it would comply with the provisions of the ordinance; President A. J. O'Reilly of the Board of Public Improvements states that as City Counselor Bates has decided that the franchise is valid, the application of the company now pending before the Board of Public Improvements will be granted; this application asks for permits to string electric light and power wires between Lindell and Laclede avenues and Newstead avenue and King's Highway; if the plans of the company are carried out, a plant will be erected in the West End, which will supply current to the large apartment houses, hotels and general public of that section of this city.

**Paterson, N. J.**—John R. Lee, 170 Broadway, New York City, has been awarded a contract to build a 15-mile traction line between Paterson and Suffern and finish it in four months; the president of the company behind this line is William Barber, of Paterson; this is to be the nucleus of a high-speed third-rail electric line to be built later between Hoboken and Paterson by the New York and New Jersey Rapid Transit Co., as soon as the needed capital can be obtained; the total cost of the Paterson-Suffern branch is estimated at \$500,000; work is to begin at once.

**Bath, N. Y.**—The Public Service Commission at Albany has authorized the Citizens' Electric Service Company to issue \$75,000 bonds and \$50,000 capital stock. Construction of the company's electric light and power station, and the steam heating plant will now be completed. The company holds a franchise and contract for electric street lighting service and a franchise for the delivery of steam heat.—S. J. Richards, Vice-President.

**Broadalbin, N. Y.**—The Public Service Commission has authorized the Broadalbin Electric Light and Power Company, of Broadalbin, to issue stock and bonds to the amount of \$52,500, part of which will be used in constructing a dam, power house, transmission line and for equipment.

**Buffalo, N. Y.**—The Public Service Commission, has given permission to the Cataract Power and Conduit Company, of Buffalo, to issue \$12,000 bonds, part of which will be expended in extension and improvement of its plant.

**Gouverneur, N. Y.**—Alexander B. Clark and C. P. McAllister, of Oxbow, are interested in a scheme to procure power for electric lighting purposes from Bullhead Lake.

**Heuvelton, N. Y.**—Heuvelton Heat, Light and Power Company, with \$25,000 capital, has been incorporated by Edward L. Thornton and Elsie F. Thornton, 1674 Kenmore avenue, Chicago, and Alonzo Thornton, Heuvelton, N. Y.

**Jamestown, N. Y.**—The Municipal Lighting Commission is considering the proposition of installing a municipal steam heating plant in connection with the present municipal electric plant, utilizing the exhaust steam, from which alone a revenue of \$16,000 is estimated; probable cost of plant, \$30,000; the plan is to be submitted to vote of taxpayers after favorable report is made.—S. A. Cortson, Mayor.

**Little Falls, N. Y.**—The Utica Gas and Electric Company has decided to extend its mains to Little Falls.—C. A. Greenidge, Superintendent.

**Harvey, N. D.**—The Harvey Electric Light and Power Company will commence operations on their new plant at once and expect to be able to furnish light by November 5; the building will be 28x80 and will be fitted out with a 150-h.p. boiler and a 125-h.p. Corliss engine and a dynamo sufficient for all present needs.

**Lima, O.**—Mayor Fred C. Becker has vetoed the ordinance passed by Council repealing a former ordinance providing for the establishment of a \$100,000 municipal lighting plant; the ordinance was passed by two of the Councilmen changing their views on the subject at the last minute; it is believed that it will be impossible for the Council to pass the ordinance over the veto, and it is now practically a surety that the municipal plant will be constructed, work beginning at once on the preliminary plans.

**Springfield, O.**—The Springfield Light, Heat and Power Company, with \$1,000,000 capital, has been incorporated by Joshua D. Price, Wm. H. Sharp, and others.

**Warren, O.**—The Trumbull and Mahoning Electric Company has formed to construct a dam across Mahoning River. The company plans to ask a franchise for light and power in Warren.

**Anadarko, Okla.**—The O'Neill Engineering Co., Dallas, Tex., has completed plans for a municipal water power plant; the question of issuing \$50,000 bonds for constructing plant will be submitted to a vote of the people.

**Bartlesville, Okla.**—Council has decided to erect sixteen electric arches over Second, Third, Dewey and Johnstone, streets; each of the arches will have 50 incandescent lights.

**Stigler, Okla.**—R. E. Stalcup has secured franchise for an electric light plant and has organized a company with a capital of \$20,000.

**Portland, Ore.**—The City Executive Board rejected the bids for illuminating the streets and municipal buildings for a term of five years and directed the City Auditor to advertise for new ones.

**Reading, Pa.**—A power plant will be erected by the Reading Power Company, which, with its equipment, is to cost \$1,500,000.

**Wiconisco, Pa.**—The Wiconisco Electric Light, Heat and Power Company, with \$5,000 capital, has been incorporated to furnish electric light, heat and power to the residents of Wiconisco; B. W. Fees, G. Schoffstall, of Tower City, and others, are incorporators.

**Custer, S. D.**—The Westinghouse Electric and Manufacturing Company has prepared plans for a power plant on French Creek to develop 600 horsepower.

**Sioux Falls, S. D.**—The Sioux Falls Gas Company has been incorporated in New Jersey with \$250,000 capital, by J. D. Buzby, Camden, N. J.; F. C. Whittaker, Philadelphia, Pa., and others.

**Henrietta, Tex.**—The Council granted a franchise to M. W. Bohan and his associates to furnish gas to the town of Henrietta, the maximum rate to be 50c. per 1,000 feet.

**Sherman, Tex.**—Council granted a 30-year franchise to Treat & Crawford, of Pittsburg, to install a natural gas plant.

**Sweetwater, Tex.**—Engineers Burns & McDonnell, Kansas City, Mo., are preparing plans for a light plant for the city.

**Wichita Falls, Tex.**—A franchise has been granted to M. W. Banam, Corsicana, and associates, to operate gas works in Wichita Falls for 25 years; gas to be piped from Petroleum, 16 miles; estimated cost, \$100,000.

**American Fork, Utah.**—Survey has been completed for power plant in Alpine Canyon by the Utah Light and Power Company.—John H. Wootton, Manager.

**Buena Vista, Va.**—The Rockbridge Power Company has secured a franchise to furnish city with electric light and power; the company proposes to develop water power on North River and to furnish electricity to Buena Vista, Glasgow, Buchanan and possibly Lexington, Va., locating substations in each city.

**Portsmouth, Va.**—The light Committee has recommended to the Council the installation of nine electric arc lamps.

**Cheney, Wash.**—The Washington Water Power Company has a five-year contract to light the town and will furnish 35 high-frequency, 50-candlepower lamps.—Address Secretary.

**North Yakima, Wash.**—The Northwest Light and Water Company has purchased the Kennewick Electric Company's light and water plant at Kennewick, paying for it \$75,000; the same company has taken over the Pasco light and water system and will take possession at once; the officers of the purchasing company are Robert Strahorn, President; A. G. Smith, Secretary, and George Arrowsmith, Manager; the Northwest Light and Water Company will extend its lines to the several towns along the Northern Pacific Railroad as far as Pasco; the capacity of the plant is to be materially enlarged.

**Cedar Grove, Wis.**—The question of constructing an electric light plant is under consideration.

**Brockville, Ont.**—The municipal electric light station has been destroyed by fire.

**Glencoe, Ont., Can.**—After repeated endeavors to make satisfactory terms with private corporations for electric lighting, Council has decided to submit a proposition to the ratepayers for establishing a municipal plant.

## FIRE EQUIPMENT

**Burlingame, Cal.**—The Board of Town Trustees have finally passed ordinance creating a Fire Department.—Address Trustee Bodwell.

**Oakland, Cal.**—The Board of Public Works has been authorized to enter into a

contract or contracts for the construction of a fire engine house at the southwest corner of 13th avenue and Hopkins street, at a cost not to exceed \$10,000.—Frank R. Thompson, City Clerk.

**Hartford, Conn.**—The plans of Architects Zunner & Sellen have been accepted by the Board of Fire Commissioners for a brick and stone engine house. Bids will be received by the Board of Contract and Supply.

**Naugatuck, Conn.**—A site is soon to be selected for new hose house.—Address Fire Board.

**South Hadley, Conn.**—There is every probability that the Center will shortly be provided with a chemical engine and regularly organized fire district and company.

**Washington, D. C.**—Chief W. T. Belt of the Fire Department has asked for an appropriation of \$980,480 for seven new engine companies, new houses, new equipment, etc., for the Fire Department.

**Clinton, Ill.**—The employees of the Illinois Central Railway Company have organized a Fire Department for the extensive railway property in Clinton.—Address City Clerk.

**Kankakee, Ill.**—The Board of Works recently held a special meeting to discuss new Seventh Ward engine house here.

**Rockton, Ill.**—Chas. E. Shufelt, Fire Marshal, can be addressed regarding new Fire Department to be organized, to consist of two companies and to be modernly equipped.

**Sterling, Ill.**—Council will advertise for bids for purchasing 500 feet of hose.

**Kansas City, Kan.**—Fire Chief John McNarrey recommends the purchase of two motor wagons for the Fire Department.

**Bliddeford, Me.**—Arrangements will probably soon be made for purchasing new chemical fire engine.—Address Fire Board.

**Baltimore, Md.**—Fire Chief Geo. W. Horton recommends the purchase of an auto wagon for the Fire Department.

Funds to the amount of \$40,000 have been secured for a new truck house to be erected at Calvert and Read streets.

A site is to be secured at Lakewood avenue and Fayette street for a new engine house, etc.—East End Improvement Association.

**Williamsport, Md.**—The members of the Potomac Fire Company are planning to raise funds for the purchase of a new fire engine.

**Sheffield, Mass.**—Additional hose is badly needed for the Fire Department.

**Houghton, Mich.**—A fire company has been organized at Centennial Heights.—John Hakli, President.

**Calumet, Mich.**—Centennial Heights Fire Company, recently organized with John Hakli as President, for improving fire protection for that section; new hall is to be erected on Second street, and equipment will soon be purchased.

**Grand Rapids, Mich.**—The Board of Police and Fire Commissioners is considering the question of appropriating \$20,000 for new engine house.

**St. Paul, Minn.**—Plans are being considered by the Fire Board for new fire house to be erected at Snelling and Ashland avenues; cost, \$15,000.

**Virginia, Minn.**—The City Clerk has been instructed to advertise for bids for combination hook and ladder truck for Fire Department; and also a No. 1 size steam fire engine with a capacity of 900 gallons per minute.

**Jefferson, Mo.**—The question of purchasing new fire hose for the Richmond Hill Fire Department is being discussed.—James Frazier, Fire Chief.

**Kansas City, Mo.**—Architects E. C. Faris, Tenth and Walnut streets, has prepared plans for a new fire station at Fifth and Main streets.

**Beatrice, Neb.**—Site on Fifth street is to be purchased for new Fire Headquarters building.—J. S. Walker, Secretary of the Building Committee.

**Owego, N. Y.**—The Village Board will purchase additional hose.

**New York, N. Y.**—Address Fire Commission for further information regarding improvements to building of Hook and Ladder Company No. 18, at 84 Attorney street, and improvements to Engine Company No. 12 house, at No. 261 William street.

**Ravena, N. Y.**—The taxpayers of the local fire district recently voted to erect a new hose house; James Cochrane is interested.

**Rochester, N. Y.**—Site at Child and Campbell streets has been selected for the new hose house to be erected here.—Address Mayor Edgerton or Alderman Gerling.

**Schenectady, N. Y.**—Council will probably equip the public schools with an electrically-operated fire-alarm system without long delay; the cost for twenty buildings, it is estimated, would be between \$6,000 and \$8,000.

**West Seneca, N. Y.**—Architect W. H. Zawadzki, Buffalo, is completing plans for the Village Council, Hugh Donowick, Chair-

man Building Committee, West Seneca, for a two-story fire department building, to cost \$18,000.

**Dickinson, N. D.**—Council will purchase hose cart for the North Side of the city.

**Altoona, Pa.**—Council has directed the Committee on Police and City Property to negotiate for an available site in the Twelfth Ward upon which to construct a fire station.

**Bristol, Pa.**—John N. Degroot has contract for new fire house to be erected for the Enterprise Company No. 5; new building is to be brick, two-stories high.—T. B. Harkins, President.

**Chester, Pa.**—A joint resolution by Mr. Kepner, of Common Council, was passed which provided that \$2,500 be inserted in the appropriation bill of 1909 for the purchase of a combination hose and chemical wagon of improved make for the Franklin Fire Company.

**Collingdale, Pa.**—A new combination town hall and fire house on the order of the one recently erected at Sharon Hill, will be built in Collingdale at a cost of \$10,000.

**Harrisburg, Pa.**—Council has directed the purchase of a combined chemical engine and reel hose wagon to be placed in care of the Susquehanna Steam Fire Engine Company, No. 9.

At a recent meeting of the Camp Hill Volunteer Fire Company, at Camp Hill, it was decided to have plans prepared for a new two-story brick fire house, to be 36x60 feet in dimensions and erected on property purchased on Market street, at a cost of \$5,000.

**Lewiston, Pa.**—The Borough Council will build new fire station and purchase fire apparatus.

**Pittsburg, Pa.**—Architects Thos. W. Boyd & Co. are receiving bids for a 2½-story engine house in the 43d Ward, for the Board of Public Safety; cost, \$250,000.

**Reading, Pa.**—An ordinance making an appropriation of \$1,400 for alterations to the Junior engine house to accommodate the ambulance which it proposes to install, has been introduced in Council.

**Camp Crook, S. D.**—A fire company is being organized.—Address Village Clerk.

**Knoxville, Tenn.**—A site is soon to be purchased in the Ninth Ward for the erection of a new fire hall.—Address Alderman Cox.

**Quannah, Tex.**—Council will purchase fire hose.

**Victoria, Tex.**—Council has decided to establish a paid Fire Department.

**Crandon, Wis.**—A fire company has been organized.—C. B. Marden, Secretary.

**West Allis, Wis.**—Plans are under way for new fire station and better fire protection in the East End of the city.—Address Fire Board.

## ELECTRIC RAILWAYS

**Phoenix, Ariz.**—The Phoenix City Railway proposes to run a line north on Second avenue from Washington street to Baltimore, the south line of Simms addition, and through other streets.

**Los Angeles, Cal.**—An agreement has been reached between E. H. Harriman and Henry E. Huntington to expend \$2,000,000 on the extension of the so-called Huntington electric lines radiating from Los Angeles. The work includes the furnishing of an interurban service between Los Angeles and San Diego by way of Elsinore Lake and Escondido, tapping as well a rich series of valleys.

San Bernardino Valley Traction Company is considering extending its line to the northwestern sections of the city.

**Oakland, Cal.**—An ordinance has been adopted granting to the San Francisco, Oakland & San José Consolidated Railway, a corporation, the right, privilege and franchise for the period of forty-eight years to construct, lay down and maintain railroad tracks of standard gauge, with all necessary switches, crossings, sidings, side-tracks, connections, poles, wires, and other necessary appliances, appendages and adjuncts, and to pass with railroads, to be operated by electricity, or such other improved mode of operation as may be authorized by law, except steam locomotives, over a certain route.

**Sacramento, Cal.**—The Central California Traction Company, Stockton, Cal., operating a line between that city and Lodi, will soon build to this city.

**Griffin, Ga.**—Surveys for the Middle Georgia Interurban Railway are reported being made from Jackson to Griffin. L. W. Roberts, of Atlanta, and W. F. Smith, of Flovilla, are in charge of the work. It is estimated that the road will be about seventy miles. The line will be built from Griffin, Jackson, Mansfield and Social Circle, with a branch to Flovilla.

**Clarksville, Ga.**—Necessary capital has been secured and track materials obtained for the construction of the Clarksville Street Railway. The line will run from the depot to the business and residence parts

of the town, and it is contemplated to extend it in the near future to the Ninth District School, 1¼ miles north of town.

**Decatur, Ill.**—The Illinois Central Traction Company will construct a belt line at Decatur and build and equip a power house.—L. E. Fischer, General Manager.

**Galesburg, Ill.**—Steps are being taken to finance the proposed Galesburg, Aledo & Northwestern Railway, and \$40,000 has already been subscribed in this city. The proposed interurban line will be built in three sections: From Galesburg to Alexis, from Alexis to Aledo, and from Aledo to either Rock Island or Muscatine. The section from Galesburg to Alexis will be built first and will cost about \$300,000.—B. F. Arnold, Galesburg, President.

**Taylorville, Ill.**—Necessary capital has been promised for proposed Nokomis-Taylorville interurban road. The total length of the proposed line is twenty-one miles, and the route will be the old Nokomis-Taylorville wagon road through Johnson, Bear Creek and Greenwood townships in Christian County. W. B. Adams, Taylorville, is promoting the project.

**Kendallville, Ind.**—The Kendallville, Ligonier & Goshen Traction Company has been incorporated to construct an electric railway between Goshen and Kendallville, through Ligonier, and with spurs to Albion and Rome City, and connecting with the main line at Brimfield. The road would connect at Goshen with the Chicago, South Bend & Northern Indiana Railway Company's line and at Kendallville with a short time with the Toledo & Western Road; capital, \$10,000.—Elmer E. McCray, President; C. C. Bayer, Secretary and Treasurer, of Kendallville.

**Clinton, Ia.**—A project for new electric railway to connect this city and Dubuque is being promoted by Y. J. Wilcox, of Clinton.

**Davenport, Ia.**—Surveys are now being made for the proposed Rock Island-Peoria Interurban Road; Mrs. Alice Butler Moore is a promoter.

Final surveys for the Davenport-Maquoketa-Dubuque interurban line have been completed between this city and Maquoketa. W. L. Spencer, Mt. Pleasant, W. Va., is reported to be interested.

**Keokuk, Ia.**—Considerable preliminary work has been done to secure the construction of an electric railway from this city to Columbus Junction, Ia.—J. C. Petersen, Columbus Junction, is President.

**Sioux City, Ia.**—The Sioux City & Spirit Lake Railway Company has closed a contract with Westinghouse, Church, Kerr & Co. for the construction of the road from Sioux City to Spirit Lake; the engineers of the constructing company will be in the city in a few days and the surveys will be completed shortly.—J. D. Browning, General Manager.

**Waterloo, Ia.**—The Waterloo, Pella & Southwestern Railway will, it is said, commence active construction work this fall.

**Lawrence, Kan.**—Council has granted a franchise to the Kansas City & Kansas Southwestern Railway Company to construct an interurban line through Lawrence.

**Manhattan, Kan.**—Council has granted a franchise to W. R. West and Joseph T. West, of Kansas City, for an electric railway system in Manhattan.

**Lexington, Ky.**—The Grand Lodge of the Knights of Pythias will take up the matter of extending the street railway lines to the new Pythian Home, via the Nicholasville pike and across to the Harrodsburg road.

**New Orleans, La.**—The Grand Isle Development and Construction Company is reported chartered to construct an electric railroad from New Orleans to Grand Isle, as projected by the New Orleans & Seashore Air Line Railway Company; capital, \$300,000. Directors: L. H. Marrero, Sr., L. H. Marrero, Jr., J. W. T. Stephens, Seeley Dunn and Charles Farwell.

**Frederick, Md.**—The Washington, Frederick & Gettysburg Railway Company (Geo. William Smith, General Manager) is reported organized, with D. Columbus Kemp, President; Charles C. Waters, Secretary, and Franklin B. Smith, Treasurer. The road is now completed within 1,500 feet of the connection with the Monocacy Valley Railroad, which runs from Catocin to Thurmont, a distance of five miles. It is said that the entire road from Frederick to Thurmont will be built and put in operation by the middle of next month. From Thurmont the road will be built to Emmitsburg, a distance of five miles, and from Emmitsburg to Gettysburg, its terminal, a distance of ten miles. With the building of the link from Emmitsburg to Gettysburg the Frederick County end of the line from Washington to Gettysburg will be completed.

**Boston, Mass.**—The Railroad Commission will fix a route for the proposed elevated extension of the Boston Elevated Railway from the Sullivan Square terminal through Everett to the central section of Malden.

**Billings, Mont.**—Surveys are being made for the Billings & Cooke City Railway route of the proposed electric railway system which is shortly to be built from Cooke City via Nye, Dean, Joliet, Laurel and Billings. The company is planning to begin work on the road about October 1. Power for the operation of the lines will be furnished by the Stillwater Power Company from a station which is to be built at Stillwater Canyon; capital, \$2,000,000.—J. B. Clayburg, Helena, President; A. L. Babcock, Vice-President and Treasurer; George H. Savage, Secretary and General Manager, all of Billings unless otherwise stated.

**Kearney, Neb.**—A company, to be known as the Kearney & Loup Valley Railway Company, is to be formed to build an electric railway from Kearney to the northwest, through the village of Pleasanton and on up the Loup Valley, with a branch line running to Ravenna. Surveys for part of the road have been made, and it is hoped to begin construction work next spring. Eugene Morey, Chief Engineer, Kearney, is interested.

**Sargent, Neb.**—C. E. Coon, of Cincinnati, is here looking over the project for constructing a steam car and motor line from Ord, Neb., via Sargent, to Dunning.

**Paterson, N. J.**—John R. Lee, city, has secured the contract for the construction of the railroad between Paterson and Suffern, which is to be built by the North Jersey Traction Company; there were ten bids in all, and the total cost is estimated at about \$500,000; the line will extend a distance of fifteen miles and will be a branch of the road which is to be built between this city and Hoboken by the New York & New Jersey Rapid Transit Company. William Barbour is the President of the Paterson-Suffern line and Malcolm R. McAdoo is Vice-President; according to the plans the road will be constructed on what is known as the third rail system and an elevated structure is to be placed over all crossroads and wherever the tracks cross the Erie Railroad.

**Mineola, N. Y.**—The New York & North Shore Traction Company (Hugh Cook, Chief Engineer, Roslyn) is stated to have applied to the Public Service Commission, Second District, for permission to extend its line from Mineola to Hicksville, a distance of 6¼ miles.—Charles H. Clark, Chief Engineer.

**Rochester, N. Y.**—The Public Service Commission has granted permission to the Rochester & Elmira Traction Company to issue and sell \$1,000,000 bonds to build, operate and maintain a trolley road between this city, Corning and Elmira, that will permit the operation of high speed express trains, besides slower local trains; the road is to be built in sections, beginning at the south line of this city; the first section will include the distance between Rochester and Lakeville, on Conesus Lake, and other sections will be begun as soon as the first is well under way; work is to be begun in the very near future, and will be carried forward as rapidly as possible; the section will be from Lakeville to Dansville, and the section to be operated first will be between this city and Lakeville and Dansville. Reed & Shurt are attorneys for the company.

**Charlotte, N. C.**—W. S. Lee and L. C. Harrison, representing the Charlotte Power Company, have been granted franchises to build and operate a street car system in the towns of Mount Holly and Lowell.

**Defiance, O.**—The Northern Ohio Electric Railway Company, which proposes to build an electric railway from Defiance to Montpelier, is now investigating another route, a line from Rockford, O., to Coldwater, Mich. It is proposed to leave the Dayton-Fort Wayne line at Rockford and run a line north through Van Wert, Paulding, Defiance and Bryan to Montpelier, and eventually to Coldwater, Mich.; steps will be taken in the near future to make the preliminary surveys.

**Altus, Okla.**—The Altus, Roswell & El Paso Railway Company has completed grading between Altus and Hollis, Okla., a distance of thirty-three miles, and Edward Kennedy, President, invites bids for bridging and laying tracks.—H. H. Fielder, Chief Engineer, Altus.

**Hobart, Okla.**—The Hobart Motor Railroad Company has been granted a charter to build a number of lines. One extends from Hobart northwest through Kiowa, Washita and Peckham counties to the Texas Panhandle, which borders Roger Mills County, a distance of eighty miles; another passes through Kiowa and Tillman counties to the State border in Comanche County, seventy-five miles; a third through Kiowa, Washita, Caddo and Canadian counties to Oklahoma City, 125 miles, and a fourth through Kiowa and Jackson counties to the town of Altus, fifty-five miles. All the roads originate in the town of Hobart. The estimated cost of construction and equipment is \$15,000 per mile; capital, \$100,000. Incorporators: H. H. Hoover, R. E. Nye, Arthur Johnston, A. B. Wey,



J. H. Montgomery and Jacob Slanor, all of Hobart.

**Tulsa, Okla.**—The Mid-Continent Traction Company, organized and chartered last year to build a standard gauge electric railway, 110 miles in length, connecting Tulsa, Sapulpa, Shawnee and intermediate points, is reorganizing preparatory to the resumption of construction work. Much preliminary work has been done on the lines intended to be covered by this company, and light and power franchises, together with selected interurban park properties and right-of-way, have been secured.—F. L. Smart, President; Graham Burnham, Vice-President and General Manager; F. Brown, Treasurer; J. Robert Burnham, Chief Engineer, all of Tulsa.

**Carnegie, Pa.**—Surveys have been completed from Belington, W. Va., to a point near this place for the West Virginia Connecting Railroad. This road was chartered about two years ago for the purpose of building a road from Belington to Waynesburg, Pa., sixty-eight miles. D. F. Maroney, Pittsburg, Pa., and J. V. Thompson, Uniontown, Pa., were among the incorporators.

**Chambersburg, Pa.**—The Chambersburg & Western Electric Railway Company has decided to begin a canvass for a right-of-way for the new line to St. Thomas at once.—R. W. Ramsey, President.

**St. Marys, Pa.**—The Pittsburg, Shawmut & Northern Railroad is securing one-year options on coal property and right-of-way for new lines in Westmoreland and Indiana counties.—H. S. Wilgus, Angelicus, N. Y., is Engineer Maintenance of Way.

**Titusville, Pa.**—The Titusville Electric Traction Company (W. J. Smith, President) has announced that construction work on the proposed extension which is to connect Titusville with Union City by way of Riceville and Lincolnville, will be started within the next thirty days and that the first work of grading would be done on the Union City end of the line. The preliminaries have been completed, and it is said that the last of the right-of-way has also been secured between Clappville and Cambridge Springs.

**Spartanburg, S. C.**—A. W. Jones, Johnson City, Tenn., Assistant Chief Engineer the Carolina, Clinchfield & Ohio Railroad, has been making an investigation preparatory to reporting upon the probable cost of the construction of the road into Spartanburg from Bostic, N. C.

**Jamestown, Tenn.**—The charter of the Fentress County Railroad Company has been amended so that it can build a branch road from a point three and three-quarters miles south of Jamestown to Oneida, in Scott County.

**El Paso, Tex.**—The El Paso Valley & Fort Hancock Electric Railway Company has been formed recently to build an electric railway from El Paso to Fabens. Among those interested in the project are J. S. Reynolds, Charles N. Bassett and Felix Martinez.

**Ogden, Utah.**—David Eccles, Ogden, and associates of the Ogden Rapid Transit Company have asked franchise for building an electric line through Ogden Canyon.

**Alexandria, Va.**—The Washington, Alexandria & Mount Vernon Railway Company, in conjunction with the Washington Southern Railway Company, is planning to make a number of improvements on King street, in Alexandria, to cost about \$18,000.

**Milwaukee, Wis.**—The State Railroad Commission has granted the Milwaukee Light, Heat & Traction Company (John I. Beggs, President) authority to extend its line from Waterford to Lake Geneva.

**Stoughton, Wis.**—The Cincinnati Construction Company has been granted franchise here for its proposed interurban line.

**Toronto, Ontario, Can.**—The Toronto & York Radial Railway Company is said to be planning to extend its line from Yonge street to Markham and Locust Hill, eventually reaching Port Perry.—W. H. Moore, General Manager.

## BRIDGES

**Montgomery, Ala.**—The Louisville & Nashville Railroad (E. E. Kuersteiner, Engineer of Bridges, Louisville, Ky.) has made tentative plans for a bridge over Pigeon Creek to replace the present structure. Span is to be 105, steel superstructure supported on concrete piers.

**Sacramento, Cal.**—Darby Layton, at \$3,557, was low bidder September 14 for constructing county bridge over Willow Creek near Folsom.

**Greensboro, Ga.**—The county will vote October 7 on issuing \$50,000 of bonds for bridge and road work.

**Chicago, Ill.**—City Bridge Engineer Thomas G. Pigfeldt will ask an appropriation from Council this fall to prepare plans for a new Lake street bridge in preparation for the annual appropriation in January; the proposed plan is for a double deck bascule, the only one of its kind in the city.

**Neoga, Ill.**—The town has voted on borrowing \$2,500 for bridge work.

**Peoria, Ill.**—Plans are being prepared for a steel and concrete bridge to be constructed over the Illinois River by the Peoria & Pekin Railway Company (E. A. Burrill, General Manager) at an estimated cost of \$500,000.

**Streator, Ill.**—Plans have not been selected for the proposed bridge which the city is going to build across the Vermillion River.

**Taylorville, Ill.**—The Highway Commissioners of Taylorville and Johnson townships met with the Committee of Supervisors and decided to build an 80-foot span steel bridge over the South Fork between the two townships; bids for building this structure will be advertised for soon.—Address Town Clerk, Taylorville, Ill.

**Decatur, Ind.**—The County Council has appropriated \$4,000 for a new bridge.

**Charles City, Ia.**—The County Supervisors will call for bids for constructing a concrete bridge over the Cedar at Main street.

**Sioux City, Ia.**—Council will shortly take up ordinance calling for plans and specifications for a viaduct at Wall street. Proposed length is 1,800 feet, and estimated cost is \$180,000.

**Kansas City, Kan.**—R. L. McAlpine, City Engineer, has prepared plans for an overhead bridge on Sixth street, to cost about \$22,000.

**Baltimore, Md.**—The city proposes to construct a bridge over the Western Maryland Railroad, in connection with the Liberty road improvement; also a bridge over Slighuff avenue.—B. T. Fendall, City Engineer.

**Grand Rapids, Mich.**—L. W. Anderson, City Engineer, is preparing plans and estimates for viaducts to be erected in connection with the general grade separation scheme.

**Crookston, Minn.**—The city will be in the market for a new steel bridge in about a fortnight; details will be presented later.—J. E. Carroll, City Engineer.

**Kansas City, Mo.**—It is reported that H. J. Heinz, of Pittsburg, Pa., will build a large distributing warehouse in the east bottoms.

**South Omaha, Neb.**—Council has instructed City Attorney Winters to draft an ordinance requiring the construction of a viaduct on F street. The cost of construction is to be sustained by the Union Pacific and Missouri Pacific railroads and the Union Stock Yards Company.

**Minot, N. D.**—The County Commissioners will erect a steel bridge in this city.

**West Point, N. Y.**—The Lincoln Pike Association (J. W. A. Myers, President, West Point) is to erect a steel bridge 200 feet span over Salt River at West Point. Permission for the erection of the bridge has been granted by the United States War Department.

**Columbus, O.**—About one hundred resident taxpayers of Franklin County have filed a petition with the County Commissioners asking them to submit to a vote of the people a question as to the policy of the reconstruction of the bridge over Alum Creek on the Johnstown pike in Milfill Township.—F. M. Sayre, County Auditor.

**Dayton, O.**—Howard R. Klepinger, County Engineer, has completed plans and estimates for a reinforced concrete bridge to be erected over the Miami River at the Needmore River. As planned, the bridge will consist of four spans of 120 feet each. These, with three piers of 8 feet each, will make a total bridge length of 504 feet. The roadway is to be 18 feet, and the total estimated cost is \$17,950.

**Defiance, O.**—Council has decided to construct a lift bridge over the M. & E. Canal at Fifth street, at a cost of \$5,800.

**Massillon, O.**—The construction of a lift bridge to replace the present Main street canal bridge is under consideration by the Board of Public Service.

**Zanesville, O.**—The County Surveyor is preparing plans for a steel bridge to be built at Philo.

**Toledo, O.**—In a resolution sent to Council by the Board of Public Service the necessity of building a permanent span to replace the temporary piling span of the Cherry street bridge in the immediate future is urged.

**Sulphur, Okla.**—H. V. Hinckley, Engineer, has prepared plans for a steel concrete arch bridge, estimated to cost \$25,000, to be constructed across Rock Creek, in Platt National Park; plans are completed for a foot bridge in Central Park; cost, about \$3,000.

**Cheraw, S. C.**—The city will rebuild the bridge over the Pee Dee River, probably of steel.—John D. Smith, Chairman Bridge Committee.

**Dallas, Tex.**—The West Dallas Improvement League is interested in the construction of a steel viaduct over the Trinity River bottom, connecting this suburb with the city; another plan is to endeavor to

secure legislation with a view to having the Texas & Pacific Railroad Company cut out its dump and erect a trestle across the bottom, so that there may be no obstruction to the passage of the water at times when the river is in flood.

**Houston, Tex.**—Council is considering a petition from residents of the Fifth Ward asking for a \$50,000 bond issue to defray the placing of a bridge across Buffalo Bayou either at Main or Travis street.

**Richmond, Va.**—Council has appointed a special committee to recommend plans for replacing the present free bridge between this city and Manchester; an appropriation of \$300,000 is being sought.

**Spokane, Wash.**—Council is considering securing a consulting Engineer to work in conjunction with J. C. Ralston, City Engineer, in the preparation of plans for the proposed city bridges.

**Tacoma, Wash.**—Surveys are being made for the new county bridge to be built over the river near Sumner.

**Green Bay, Wis.**—W. W. Reed, City Engineer, states that the citizens on September 4 voted to issue \$150,000 bonds (not \$15,000, as previously stated) for the construction of a bridge at Walnut street; bids will be called for in six weeks.

**Milwaukee, Wis.**—Sixteenth street viaduct must be repaired immediately at a cost of about \$60,000.—Joseph P. Sherer, Commissioner Board of Public Works.

Ordinance is before Council instructing C. J. Poestch, City Engineer, to have surveys made of property needed for the erection of a viaduct at Thirty-fifth street and Thirtieth avenue.

The County Board is taking steps to secure the completion of the Grand avenue viaduct, and may award a new contract for the work. Gustav Steinhagen is Supervising Engineer for the county.

**Winnipeg, Man., Can.**—A by-law will shortly be submitted to the rate-payers to provide \$400,000 for bridges to be erected across the Red River.—H. N. Ruttan, City Engineer.

## MISCELLANEOUS

**Oakland, Cal.**—Arrangements are under way for a new park to be laid out on the shores of Lake Merritt between the Eighth street bridge and Twelfth street viaduct.

The Board of Public Works has rejected all bids for dredging the estuary at the foot of Broadway on the ground that they were excessive; new bids were ordered advertised.

**Boulder, Col.**—Property to the west of the city, at the mouth of Gregory Canyon, has been donated for park purposes.

**Bridgeport, Conn.**—Council favors the acquisition by the city of Fayerweather Island for an extension of Seaside Park.

**Macon, Ga.**—Arrangements are under way for improvements to Central City Park.

**Rathdrum, Idaho.**—The erection of a new concrete or brick City Hall is under consideration; the new structure is to be large and modern in every detail.

**East St. Louis, Ill.**—Citizens have voted to construct a levee from Mitchell to a point between East St. Louis and Cahokia; an election will be held later for Commissioners to have charge of this work, after which an Engineer will be appointed; cost, about \$6,500,000.—Charles A. Lambert, City Clerk.

**Davenport, Ia.**—Thomas K. Jacobs recommends that the price asked for the East End Park is very low and the tract a great bargain for \$6,000.

**Waterloo, Ia.**—At the regular meeting of the School Board the question of a new public playground was discussed.

**Lancaster, Ky.**—Stock has been taken and a local company organized to push to completion at once the construction of the City Hall.

**Baltimore, Md.**—John J. Hoffman has recommended to Harbor Engineer Lackey that the city build a public wharf at the foot of Hanover street; estimated cost, about \$25,000.

**Boston, Mass.**—Proposals for a public landing, to be built at the city's expense, at the new Northern avenue bridge, are in the hands of Mayor Hibbard, as prepared under the direction of City Engineer Jackson. The estimated cost of the landing is as follows: For scow, \$2,500; for platforms, stairs, run, bulkhead, breakwater, anchors, etc., \$3,500; total, \$6,000.

**Clinton, Mass.**—The Building Committee is to somewhat modify plans for a new Town Hall to reduce the cost of new structure.—Address Town Clerk.

**Plymouth, Mass.**—John P. Vahey, Frank Finney and others are a committee appointed to secure a site for a new Town Hall; it is proposed to recommend \$125,000 appropriation for this purpose.

**Allegan, Mich.**—Council held meeting recently to discuss plan for new park.—Address Alderman Davis, or Mayor Stern.

**Kansas City, Mo.**—The question of a new city garbage disposal plant is being discussed.—Address Alderman W. C. Culbertson or Miles Bulger.

**St. Louis, Mo.**—Plans are being prepared for two three-story \$100,000 police stations for the Board of Police Commissioners.

**Kearny, N. J.**—The town contemplates the erection of a new Town Hall here on Kearny avenue, opposite Grove street.

**Albany, N. Y.**—State canal bonds to the amount of \$5,000,000 were sold on September 26.

**Buffalo, N. Y.**—The Board of Councilmen has approved preparation of plans for a new police station. Station No. 1 is to be rebuilt as soon as possible.

**Fairport, N. Y.**—Special election was held recently for discussing park improvements.

**Lockport, N. Y.**—Plans are being completed by State Engineer Frederick Skene, Capitol, Albany, for two large lift locks, which will take the place of the present locks at Lockport; bids will be called for about December 1; estimated cost, \$2,537,747.

**Newark, N. Y.**—Plans have been prepared by J. Mills Platt, of Rochester, for a new Village Hall to be erected of brick, three stories high, and cost \$25,000.

**North Tonawanda, N. Y.**—William M. Mills, President of the Board of Trade, has appointed a committee, with George B. Vandervoort as chairman, to investigate into the plan of the Erie & Ontario Sanitary Canal Company for draining Niagara frontier. The committee will meet with the committee from the Buffalo Chamber of Commerce and those of the Lockport and Niagara Falls Boards of Trade and consider the matter.

**Rochester, N. Y.**—Mayor H. H. Egerton is working on the plan to have the proposed barge canal route through Genesee Valley Park changed farther south to avoid cutting the park in half; he has had State Engineer Skene go over the ground, and a new route has already been surveyed.

**Lima, O.**—Council has authorized the issuance of \$6,000 park bonds for the purchase of the Jacobs-Morris Brothers tract in the extreme eastern portion of the city.

**Liverpool, O.**—At a recent meeting of the Board of Health the erection of a new crematory was discussed; site has been purchased.

**Youngstown, O.**—Property south of the city has been offered for park purposes.—Address M. F. Hyland, Clerk.

**Portland, Ore.**—There is considerable question as to the advisability of Council selling at one time all the bonds for the various municipal improvements authorized under the charter amendments passed at the last municipal election. The bonds for the Madison street bridge will be the first sold, and it is believed that all of these should be disposed of at one time. In regard to the bonds for the second pipe line from Bull Run and other improvements to the Water Department, and also those for the public docks, parks, fireboat and reinforcing mains, it is likely that they will be sold as the funds are actually needed.—City Attorney Kavanaugh.

**Beaver Falls, Pa.**—The Borough Secretary has been instructed to advertise for bids for the construction of the garbage furnace as soon as plans and specifications are ready, the Burgess having signed the ordinance.

**Erie, Pa.**—The special committee of Councils, appointed to investigate garbage systems in nearby cities, went to Buffalo, N. Y., accompanied by Health Officer Wright, to discover what the Bison City has to offer in the way of an up-to-date garbage system; the members of the committee are Common Councilmen Lynch and Kneib and Select Councilman Yake.

**New Castle, Pa.**—The Health Committee of Councils received but one bid for the garbage removal contract for three years.—Updegraph, the present contractor, and wanted several changes in the contract. The most important change desired was that the citizens should provide their own garbage cans. Then, too, he wanted a proviso whereby he could be guaranteed \$150 for the incineration of garbage brought to the furnace by citizens independently of his wagons; the committee will look into the bid.

**Philadelphia, Pa.**—The City Parks Association urges the acquiring of four acres in Stenton Park to be used as a public park.

The Board of City Surveyors recently discussed the proposed Tocony Creek Park.

Address Board of Public Works regarding new three-story police station and patrol house at the corner of Nineteenth and Oxford streets, at a cost estimated at about \$80,000.

**Pittsburg, Pa.**—Mayor George W. Guthrie has approved bond issues amounting to \$4,430,000, and vetoed bond issue ordinances amounting to \$1,700,000; he signed all the bridge bond issues that recently passed Council, as well as the water improvement and the rubbish disposal issues,

but vetoed the ordinances which call for a new market house, a new reservoir and a new assembly hall on the North Side.

**Fort Worth, Tex.**—Commissioner Mulkey has given notice that unless the City Garbage Company improves its business methods he will, in a very short time, move to revoke the city's contract with it.

Commissioner Sam Davidson has declared himself in favor of going into the proposition offered by Mrs. Hyde Jennings of blocks 14, 15, 20 and part of block 19, in the Jennings west addition to the city at \$50,000 for park purposes; the matter was referred to him for further investigation.

**Norfolk, Va.**—The Board of Health has decided to recommend to Council the construction of a garbage crematory.

**Spokane, Wash.**—Richard Armstrong, of Chicago, Ill., representing the Greenwood-Phoenix Tunnel Company, capitalized at \$5,000,000, has announced that work will begin soon on a double track tunnel 3½ miles in length and 2,000 feet deep, to connect Greenwood and Phoenix, B. C., north of Spokane; probable cost, \$3,000,000.

**Milwaukee, Wis.**—Plans are under consideration for purchasing property for the establishment of a large new park on the lake shore in Bay View.—Charles J. Poetsch, City Engineer.

## BIDS RECEIVED

**Huntsville, Ala.**—The Madison County Commissioners have awarded the contract to John A. Camper, city, for rebuilding the Athens pike with gravel.

**Fort Smith, Ark.**—The Sewer Commissioners have relet contract for the big sanitary sewer, calling for 42 miles of underground water drainage, to the Cooney Construction Company, of St. Louis; the original contract was given up, owing to the financial conditions of the country and other unavoidable matters. The contract will be carried out according to the original specifications; after completing the big job the Cooney Construction Company is to become interested in Fort Smith and the Southwest and it is understood that permanent headquarters will be established in this city. The company was among the original bidders on the contract and was the second lowest bidder; in fact, it was only after long consideration upon the part of the Commission that the company's bid was rejected and Gawne & Co. awarded the contract.

**Escondido, Cal.**—Chick & White, Berkeley, were awarded contract for the construction of sewer system.

**Oakland, Cal.**—The Board of Public Works has awarded a contract for the construction of a rip-rap wall in the north arm of the estuary between the Eighth street bridge and the Twelfth street dam, preparatory to the dredging of the channel and Lake Merritt and the filling in of marsh lands there for park purposes, to the Piedmont Paving Company; work is to be commenced at once, and will cost 88 cents per cubic yard for 10,000 yards, or approximately \$14,000; the wall is to be constructed of rock taken from the city's quarry at Broadway and McAdam street.

The whole procedure on the development and improvement of Lake Merritt depends upon the early and successful issue of the suit now pending between the city and Edson Adams, according to City Attorney McElroy at the Board of Works, when bids were received for dredging the lake. That is all that is delaying this city from commencing this important work and making this lake an elegant park site. The bids have therefore been held up, although the Board was ready to accept that of the Standard American Dredging Company, for which R. A. Perry, who aided in constructing the harbor wall at Houston, Tex., signed the bid. The bid was for 9½ cents a cubic yard. There are 300,000 cubic yards to be dredged, and to take advantage of the bid the suit must be decided within 20 days, the time allowed by law for the consideration of such bids. Other bidders were: W. J. Schmidt, 13½ cents a cubic yard; San Francisco Bridge Company, 16.2-10 cents; American Dredging Company, 14.94-100 cents; Pacific Coast Dredging and Reclamation Company, 23 cents, and H. C. Cutting, 14½ cents.

The Board also received bids for the erection of the fire pumping station at the "Willows," designed by Architect J. D. Galloway; the City Engineer and the Architect estimated the cost of this proposed building to be \$25,000. Healy, Thibbetts & Co. was lowest bidder, offering to do the work at \$21,830. Other bidders were: Rickon, Ehrhart Engineering Company, \$22,594; Couchut-Thurston Company, \$26,990; F. C. Sullivan, \$34,751; W. Bruce, \$29,375, and Clinton Construction Company, \$24,375.

The Board also considered bids for the sinking of a well in the Conservatory Park at Grand avenue and Harrison street. J. B. Rodgers offered to sink it to a depth of

175 feet for \$275. D. J. Lynch was ready to do the work for \$329 and L. W. Murdock for \$331.

J. R. Sorensen was awarded a contract to construct a culvert at Howard and Fifty-ninth street.

**Pasadena, Cal.**—J. E. Haddock's bid of \$1,988 for the construction of a steel tie arch culvert on Chester avenue, between the Santa Fé track and Maple street, was accepted. Other bids were: Andrew Holway, \$2,546.25; California Ornamental Brick Company, \$2,675; Smith & Degryse, \$2,129; Los Angeles Bridge and Construction Company, \$2,693; H. T. Kemp, \$2,065.

**Redlands, Cal.**—Alexander Rife carried off all three contracts for street work from the Board of City Trustees, and will pave with macadam West State street, East State street and Seventh street; the several proposals were as follows: West State Street—Highway Construction Company, macadam work, 7.8 cents per square foot; oiling, 1.75 cents per foot; Ernest Frenzell, macadam, 8 cents; oiling, 1.6 cents; Alexander Rife, macadam, 6.8 cents; oiling, 1.6 cents. East State Street—Highway Construction Company, macadam, 7.8 cents; culverts, 60 cents per cubic foot; Ernest Frenzell, macadam, 8 cents; culverts, 65 cents per cubic foot; Alexander Rife, macadam, 6.6 cents; culverts, 45 cents per cubic foot. Seventh Street—Highway Construction Company, macadam, 7.8 cents per foot; Ernest Frenzell, macadam, 7.62 cents per foot; Alexander Rife, macadam, 6.5 cents per foot.

Ernest Frenzell is doing by private contract the macadam work on West Colton avenue at 7.48 cents per square foot; in order to make the record complete it was ordered that this contract be formally let, although the property owners are dealing direct with the contractor.

**Sacramento, Cal.**—The Board of Supervisors has accepted the bid of J. S. Bogges for the first section of the lower Stockton road work, that of Clark & Henery for the second section, and that of McDonald & Hayes for the third section; Bogges bid \$25,381.75, Clark & Henery \$29,274.08, and for the third section John Walther was the lowest, his figures being \$24,083.33; it was declared that he could not fulfill the contract at the figure given, so the bid of McDonald & Hayes, the second lowest, was accepted; it was \$29,819.55. Darby Laydon was awarded the contract for the Willow Creek bridge on the Folsom road at \$3,757.

**New Haven, Conn.**—Thomas F. Maher, city, has the contract for constructing sewers in sundry streets.—C. W. Kelly, City Engineer.

**Stamford, Conn.**—A. B. Griswold, city, has been awarded the contract by the Stamford Water Company for the construction of a dam, together with other work necessary to the enlargement of the reservoir, at \$103,045.

**Washington, D. C.**—The Secretary of the Interior has awarded a contract to the Stanley Contracting Company of San Francisco for \$79,381.65 to construct the East Park dam spillway and dykes in connection with the Orland irrigation project; there are 13,500 cubic yards of concrete to put in and 8,500 yards of material to excavate; the location of the work is twelve miles northwest of Sites, Cal.

**Albany, Ga.**—Dougherty County has decided to improve roads; the sum of \$30,000 is available, of which \$5,000 will be expended for steam roller and other machinery and the remaining \$25,000 for actual work.

**Pensacola, Fla.**—At a special meeting of the Board of Public Works proposals for removing garbage were opened, resulting in A. M. McMillan securing the contract for the eastern division of the city, and E. G. Sewell & Co. for the western division. The garbage bids were as follows: A. M. McMillan, for eastern division, \$262.50; for western division, \$305.50; E. G. Sewell & Co., for eastern division, \$300; for western division, \$275; J. A. Daw, for eastern division, \$275; for western division, \$350; C. W. Merritt, for eastern division, \$350; for western division, \$275. C. W. Merritt was awarded the contract for grading Palafox street at the corner of Gadsden, his bid being 35 cents per cubic yard.

**Lewiston, Idaho.**—George Kester was low bidder for constructing 54,000 square yards of brick pavement on a 5-inch base at \$3.13 per square yard—total, \$201,529.23—and on 6-inch base at \$3.35½—total \$210,496.52; catch basins, \$46; silt well, \$40; 8-inch vit. pipe, 52 cents; 12-inch, 80 cents; 15-inch, \$1.20; 16-inch, \$1.36; 22-inch, \$2.35; excavation, 50 cents per cubic yard; curb and gutter, 49 cents per linear foot; total cost per square yard, \$3.688. Kester was also low on wood block crosote, at \$2.27½ and \$2.74 for 3 and 4-inch blocks on 5-inch base, or a total bid of \$3.705 and \$4.045 per square yard; P. J. Moran bid \$2.40 for asphalt for a total of 3.014 per square yard; Joe Pequet bid on wood block carbolineum \$2.45 and \$2.80, or a total of \$2.856 and \$3.206 on 3



and 4-inch block on 5-inch base. The Warren Construction Company bid on bitulithic pavement \$2.43, or a total of \$2.88 per square yard.—John E. Nickerson, City Clerk.

**Chicago, Ill.**—J. I. Wade & Son, 43 Harrison street, have contract for 4,000 feet of sewerage and water mains at 40th and Park avenues, at \$15,000, for the Chicago Railways Company.—J. Z. Murphy, Engineer, 181 LaSalle street.

**Joliet, Ill.**—Bids on the new No. 3 engine house to be built at Washington street and Melchor Place, in the Seventh Ward, were received from three contractors; the same number of firms entered bids for the heating, plumbing and gas fitting. The lowest bid on the building, exclusive of plumbing, heating and ventilating, was that of John A. Boyd, who agreed to do the work for \$9,380. The other bids were Hanson & Peterson, \$9,500, and Fallman & Nelson, \$9,400.

The plumbing and heating bids were as follows: Poehner & Dillman—Heating, \$815; plumbing and gas fitting, \$437; total, \$1,252. Barrett Hardware Company—Heating, \$798; plumbing and gas fitting, \$450; total, \$1,248. Lawrence Henschen—Heating, plumbing and gas fitting, \$1,188.

The Board of Local Improvements has let contract to Andrew Jorgensen for installing fourteen house sewer connections.

**Lake Forest, Ill.**—Rudolph S. Blome Company, Chicago, has been awarded contract for the installation of concrete rain water tanks and foundations in connection with the J. Ogden Armour residence, at Lake Forest, which involves a large amount of concrete work.

**Moline, Ill.**—The Board of Local Improvements has let the contract for the paving of Twelfth street from First to Fourth avenue and for sidewalks in the Second Ward to the Tri-City Construction Company, the lowest bidder for each job; other bidders were: The McCarthy Improvement Company of Davenport on the paving work and Ranson & Atkinson, the sidewalk work. The bids on the paving were the same for the curb, 50 cents per ft.; on the paving the McCarthy company bid \$1.69 per yard, and the Tri-City Construction Company, \$1.62 per square yard.

**Bedford, Ind.**—Commissioners of Lawrence County have awarded McNee Dunn, of Anderson, contract for part of the construction of six miles of road in Marshall Township.

**Indianapolis, Ind.**—Bids will soon be asked for by the Board of Public Works for the construction of the Brightwood sewer, estimated cost, \$175,000.—J. T. Elliott, Chairman.

**Vincennes, Ind.**—An ordinance was introduced in Council and read for the first time, ratifying and confirming a contract and agreement entered into by the Board of Works and the United States Construction and Utilization Company, granting the latter a ten-year contract and franchise for the disposal of garbage and dead animals.

**Cresco, Ia.**—The Sewer Committee has let contract to Oliver G. Kringle, Elkader, for constructing a sewer, aggregating 2,875 feet in length, with six manholes and one flush tank.—H. G. Addie, Chairman.

**Louisville, Ky.**—Bids for laying a sidewalk in front of the high school building were submitted as follows: For concrete, Logan Coal and Supply Company, \$392; R. D. Thompson, \$365.16; Bowen-Ramsey Company, \$385; Jacksonville hexagon tile, white and black, Logan Coal and Supply Company, \$462 and \$442.40; R. D. Thompson, \$480 and \$459; Bowen-Ramsey Company, \$450 and \$430. The contract was awarded to Bowen-Ramsey Company, white hexagon tile.

**Newport, Ky.**—Ordinances were adopted by the Board of Aldermen awarding the contract for the improvement of the following streets: Sixth street, between Patterson and Brighton streets, to Mooreland & Schraeder Company; Orchard street, between Eleventh and Twelfth streets, to E. J. Knoepfle; Forbes alley, between Ninth and Tenth streets, to E. J. Knoepfle; Central avenue, between Fourth and Fifth streets, to F. G. Ader Construction Company; Central avenue, between Eleventh and Twelfth streets, to Mooreland & Schraeder Company.

**Livermore Falls, Me.**—The Board of Trustees has let contract to Richard D. Shanahan, Portland, for laying cast iron pipe and appurtenances and building a reservoir.—Isaac B. Clary, Secretary; Metcalf & Eddy, Engineers, 14 Beacon street, Boston, Mass.

**Medford, Mass.**—The contract for furnishing the city with one carload of 6-inch and one carload of 8-inch cast iron water pipe, bids opened September 21, has been awarded to R. D. Wood & Co., 400 Chestnut street, Philadelphia, Pa.—Fred L. Cushing, Water Registrar.

**West Springfield, Mass.**—The Board of Water Commissioners has awarded the con-

tract for additional pumping equipment at Bear Hole to the Walsh Boiler and Iron Works of Springfield, Mass., at \$7,900.—F. A. Barbour, Boston, Engineer.

**Detroit, Mich.**—The Department of Public Works let contract to George R. Cooke for the construction of the Campbell avenue public sewer and outlet.—J. J. Haarer, Commissioner.

**Ishpeming, Mich.**—The Board of Public Works has let contracts to Charles Johnson and Peter Munson for constructing a sewer in the Sixth Ward.—M. M. Duncan, Chairman; P. H. Devine, Superintendent Public Works.

**Suttons Bay, Mich.**—Contract for constructing a system of water works was let to Herbert Joynt, Elk Rapids, Mich., for \$4,987.55.—Archie W. Gunn, Village Clerk.

**Eveleth, Minn.**—Anderson, Johnson & Co. were low bidders at \$2,697, for the construction of the Monroe street sewer.

C. C. Butler, Virginia, Minn., was low bidder, at \$2,689, for the construction of sewer.

**Redwood Falls, Minn.**—A. C. Miller received the contract for digging and constructing tile and open judicial ditch No. 1.—L. P. Larson, Auditor Redwood County.

**St. Paul, Minn.**—The Board of Public Works has awarded the contract for repaving with asphalt Sixth street, from Washington avenue to Main avenue, to the Barber Asphalt Company, at \$11,548.—R. L. Gorman, Clerk.

**Sauk Center, Minn.**—Ilstrup & Olson, Minneapolis, have the contract, at \$2,592.75, for the construction of sewers, with appurtenances, for Sauk Center.—J. F. Cooper, City Clerk.

**Great Falls, Mont.**—The County Commissioners have opened bids and awarded contracts for constructing the Hound Creek bridge, the Sun River bridge approaches and the Truly bridge to the Midland Bridge Company, Gibraltar Building, Kansas City, Mo., at \$6,476, \$3,229 and \$10,490, respectively.

**Glasgow, Mont.**—The contract for the construction of the municipal electric light works has been awarded to W. D. Lovell & Co., 1415 Southeast Eighth street, Minneapolis, Minn., for \$13,500.

**Nevada, Mo.**—City Engineer J. M. Clack filed estimate for the paving of the public square at \$1.65 per square yard; the following bids for paving the square were opened: H. Spohrer, \$1.63 per square yard, using Pittsburg brick and Kansas Portland cement, or \$1.59 per square yard, using Cockerill brick and Portland cement; F. W. Keller, of Sedalia, \$1.59 per square yard, using material according to plans and specifications, Pittsburg brick or some other brick equally as good, and Portland cement; W. C. Brown, \$1.54 per square yard, using Pittsburg brick and Portland cement, or \$1.49 using Cockerill brick or Altoona brick or the standard brick of Coffeyville, Kan., and Portland cement; R. S. Gilfillan & Son, of Iola, Kan., \$1.49 per square yard, using Pittsburg brick and Portland cement, according to plans and specifications. The bid of R. S. Gilfillan & Son was accepted and the contract awarded.

**Yutan, Neb.**—The Katz-Craig Construction Company, Omaha, has the contract for the construction of a complete water system for Yutan.—Frank Brabee, Village Clerk.

**Benton, N. H.**—The Board of Trustees of the State Sanitarium for Consumptives, Concord, has awarded the contract for building the dam and the laying of 4,000 feet of pipe at the proposed sanitarium at Glenciffe, in the town of Benton, to the Osgood Construction Company of Nashua, at \$7,000.

**Jersey City, N. J.**—The contract for cleaning 20,000 lineal feet of 20-inch cast iron water pipe, bids opened September 21, has been awarded to the National Water Main Cleaning Company, 27 William street, New York, at 50 cents per lineal foot.—George T. Bouton, Clerk Board of Street and Water Commissioners.

**Newark, N. J.**—The contract for furnishing cast iron pipe and special castings, bids opened September 17, has been awarded to Warren Foundry and Manufacturing Company, New York City, at \$31,532, the pipe to be high pressure pipe, part with wrought iron bands on hub.—M. R. Sherrerd, Chief Engineer Department Public Works.

**Perth Amboy, N. J.**—Following are the details of paving and sewer bids recorded September 23, when the successful bidders and totals of bids were announced:

Fayette Street Brick Pavement—Meagher & Smith, excavation, 52½ cents per cubic yard; concrete, \$4.70 per cubic yard; old curb reset, 10 cents per lineal foot; new curb, 62 cents per lineal foot; Kushequa vitrified block pavement, \$1.48 per square yard; covering vitrified block pavement, \$1.55 per square yard; Catskill vitrified block pavement, \$1.37 per square yard. J. K. Jensen, excavation, 48 cents; concrete,

\$4; old curb, 19 cents; new curb, 58 cents; Metropolitan brick, \$1.50; Kushequa brick, \$1.50; Shawmut brick, \$1.35.

Jefferson Street Brick Pavement—Meagher & Smith, excavation, 52½ cents; concrete, \$4.70; new curb, 52 cents; Kushequa brick, \$1.48; Catskill brick, \$1.37; Corning brick, \$1.55. J. K. Jensen, excavation, 48 cents; concrete, \$4; new curb, 58 cents; Metropolitan brick, \$1.50; Kushequa brick, \$1.50; Shawmut brick, \$1.35.

Oak Street 15-Inch Clay Pipe Sewer—Meagher & Smith, concrete, \$5 per cubic yard; 15-inch clay pipe sewer, 74 cents per lineal foot; manholes, \$35 each. J. K. Jensen, excavation, 70 cents; concrete, \$5; sewer, 38 cents; manholes, \$29. Johan Jensen, excavation, 65 cents; concrete, \$6; sewer, 50 cents; manholes, \$35. Martin Hansen, excavation, 70 cents; concrete, \$6; sewer, 65 cents; manholes, \$36. Andrew Dahl, excavation, 58 cents; concrete, \$6.50; sewer, 65 cents; manholes, \$24.

Lawton Place 15-Inch Clay Pipe Sewer—Martin Hansen, excavation, 70 cents; concrete, \$6.50; sewer, 65 cents; manholes, \$35. Johan Jensen, excavation, 50 cents; concrete, 6 cents; sewer, 50 cents; manholes, \$35. Meagher & Smith, concrete, \$5; manholes, \$35. O. K. Jorgensen, excavation, 78 cents; concrete, \$4.50; sewer, 64 cents; 12-inch sewer, 54 cents; manholes, \$33; receiving basins, \$85. J. K. Jensen, excavation, 68 cents; concrete, \$5; sewer, 38 cents; manholes, \$29.

Neville Street 15-Inch Pipe Sewer—Johan Jensen, excavation, 50 cents; concrete, 6 cents; sewer, 50 cents; manholes, \$35. J. K. Jensen, excavation, 64 cents; concrete, \$5; sewer, 38 cents; manholes, \$29. Martin Hansen, excavation, 60 cents; concrete, \$5; sewer, 60 cents; manholes, \$35. Meagher & Smith, excavation, 55 cents; concrete, \$5; sewer, 68 cents; manholes, \$35.

Steadman Place 15-Inch Clay Pipe Sewer—J. K. Jensen, excavation, 68 cents; concrete, \$5; sewer, 38 cents; manholes, \$29. Martin Hansen, excavation, 70 cents; concrete, \$6.50; sewer, 60 cents; manholes, \$35. O. K. Jorgensen, excavation, 72 cents; concrete, \$4.50; 15-inch sewer, 62 cents; 12-inch sewer, 52 cents; manholes, \$33; receiving basins, \$85. Johan Jensen, excavation, 50 cents; concrete, 6 cents; sewer, 50 cents; manholes, \$35. Meagher & Smith, excavation, 55 cents; concrete, \$5; sewer, 68 cents; manholes, \$35.

Roosevelt, N. J.—The Plainfield Cement Stone Company, city, was awarded the contract on September 21 by the Mayor and Common Council for 30,000 square feet of concrete walks at 19½ cents per square foot; 300 feet concrete curb (radial), 90 cents per foot, and same at 20 cents per square foot and 75 cents per foot.—F. F. Simons, Carteret, Engineer.

Albany, N. Y.—The following bids were received by the Board of Contract and Supply for the improvement of Orange street, from Chapel street to Lark street: Edward F. Dillon, \$39,290; Mulderry Brothers, \$35,727; John M. Holler, \$33,675; Michael F. Dollard, \$35,392; all of Albany; in this work 11,500 yards of vitrified brick pavement on a rolled gravel foundation were called for, for which Edward F. Dillon bid \$2.15 per yard; Mulderry Brothers, \$1.97 per yard; Holler, \$1.78, and Michael F. Dollard, \$1.95.

The following bids were received by the Board for paving Stanwix street, from Delaware avenue to Second avenue: Michael F. Dollard, \$7,213; John M. Holler, \$7,131; Mulderry Brothers, \$7,203.

For paving North Pearl street, from North First street to North Second street, following bids were received: Michael F. Dollard, \$7,821; John M. Holler, \$8,429; Mulderry Brothers, \$7,766; Edward F. Dillon, \$8,667.

The Board of Contract and Supply received bids from John L. Gartland, Charles H. Collins, Augustus Elgie, Brown's Military Band and Cappellano's Band to furnish music during the annual parade of the Police and Fire Departments. Each bid was \$105, and the matter was referred.

For the improvement of Orange street, from Chapel street to Lark street, bids were received from Edward F. Dillon, M. F. Dollard, Mulderry Brothers, and John M. Holler. For the paving of Stanwix street, from Delaware avenue to Second avenue, bids by Mulderry Brothers, M. F. Dollard and John M. Holler were received. For paving North Pearl street, from North First street to North Second street, bids were submitted by M. F. Dollard, John M. Holler, Mulderry Brothers and Edward F. Dillon.

There were three bidders for laying a sewer in Garden street—John M. Holler, John Doyle and M. F. Dollard. For laying sewers in Erie, Champlain and North streets bids were received from the same bidders. For making repairs to the brick sewer under the carriageway of Lark street, John Doyle, J. M. Holler and M. F. Dollard submitted bids.

The Star Electric Company of Bingham-

ton put in a bid for furnishing motor generators for the fire alarm system for \$717. The bids for making a coal storage for the filtration plant were from Besch & Beebe, Feeney & Sheehan and M. Kantrowitz.—Isidore Wachsman, Secretary Board; Walter Mellus, City Engineer.

**Amsterdam, N. Y.**—The Sewer Board has awarded contract to Nicholas Carbonelli, city, at \$3,334.15, for construction of sewers in McCleary, McNeil, Sanford and Sloan avenues.—F. E. Crane, City Engineer.

**Brooklyn, N. Y.**—Bids were opened September 16 by Bird S. Coler, President Brooklyn Borough, for the following sewer construction, the bids being received on a percentage basis, the Engineer's preliminary estimate of total cost to be taken as the 100 per cent. basis: (a) for furnishing material and constructing sewer in East 98th street, brick and concrete; from East New York avenue to Hegeman avenue, with outlet sewers in East 98th street, etc., Sec. No. 1. Engineer's estimate of total cost, \$60,077; (b) furnishing material and constructing brick and concrete sewer in East 98th street, from East New York avenue to Hegeman avenue, with outlet sewers in East 98th street, etc., Sec. No. 2. Engineer's estimate of total cost, \$95,090; (c) furnishing material and constructing sewers in Scott avenue, from Newtown Creek, north of Metropolitan avenue, to St. Nicholas ave., etc., Sec. No. 2. Engineer's estimate of total cost, \$278,728: Bracken MacAveney Company, 44 Court street, Brooklyn, (a) 80 per cent.; (b) 78 per cent.; Douglas & Halen, Brooklyn, (a) 91 per cent.; (b) 96 per cent.; Siegritto & Menzino Company, (a) 76 per cent.; (b) 76 per cent.; Peace Brothers, Flushing, L. I., (a) 94 per cent.; (b) 99 per cent.; Joseph Cavanaugh, 302 Lefferts avenue, Brooklyn, (a) 86½ per cent.; Charles A. Meyers, 1408 Union avenue, Brooklyn, (a) 86.97 per cent.; Donegan & Redmond Company, 5904 14th avenue, Brooklyn, (a) 86 per cent.; (b) 93 per cent.; O'Grady Brothers, Brooklyn, (a) 94 per cent.; (b) 96 per cent.; Donlon Construction Company, 84 Broadway, Brooklyn, (a) 84.7 per cent.; Culp & McCauley, Brooklyn, (a) 89.97 per cent.; J. Keeley, Brooklyn, (a) 86.13 per cent.; (b) 92.13 per cent.; J. J. Creem Company, 688 Greene avenue, Brooklyn, (a) 76.75 per cent.; (b) 82.75 per cent.; (c) 69.75 per cent.; Murphy Brothers, Bath Beach, (a) 83.8 per cent.; Gore Engineering and Construction Company, 206 Broadway, New York, (a) 104.8 per cent.; (b) 101.9 per cent.; (c) 95.2 per cent.; J. L. Carey Company, 190 Montague street, Brooklyn, (a) 75.48 per cent.; Bonacci & Vincell Company, (b) 77.49 per cent.; C. A. Meyers, 1408 Union avenue, Brooklyn, (b) 88.97 per cent.; Ryan & Reilly, 26 South 15th street, Philadelphia, Pa., (b) 101.45 per cent.; (c) 77.70 per cent.; J. H. Gray & Co., 23d street and Broadway, New York, (c) 78½ per cent.; H. Neumann, Scott avenue, Brooklyn, (c) 75 per cent.; Phoenix Construction Company, 41 Park Row, New York, (c) 80.9 per cent.

The contract for removing the ashes of the city for a period of five years was awarded by the Board of Estimate to the Borough Construction Company and Charles Crawford at 34½ cents per yard.

**Gates, N. Y.**—W. Fuller, Rochester, has contract for brick sewer in Jay street, Gates.—Michael J. Magin, Town Clerk.

**Milford, N. Y.**—The contract for constructing the State road on South and East Main streets was let to Gerhardt & Co., of Brooklyn, at \$6,483.

**New York, N. Y.**—The following bids were opened by the Department of Bridges for regulating, grading and repaving Second avenue and 59th street, Manhattan Borough, at the entrance to the Blackwell's Island Bridge, over the East River, between the Boroughs of Manhattan and Queens: Charles Meads & Co., 299 Broadway, \$14,300 (awarded contract); Thomas Tarry, \$15,402; Snare & Triest Company, \$16,920; William Ficklen & Co., \$17,200; Atlantic Construction Company, \$17,500; Bart Dunn, \$17,074; Northeastern Construction Company, \$24,927, all of New York.—J. W. Stevenson, Commissioner.

Bids were opened by the Park Board for paving and repaving with rock asphalt where directed the walks of Central and other parks in the Borough of Manhattan; the lowest bid was that of the Sicilian Asphalt Paving Company, 41 Park Row, New York, at the following prices: 500 cubic yards concrete furnished and deposited, \$6.50; 125,000 square feet pavement of rock asphalt mastic, 8½ cents, and 200 linear feet 5-inch bluestone curb, \$1.50; total, \$14,175. Other bidders were: Gormen & Lees, \$21,550; the Neuchatel Asphalt Company, Ltd., \$21,550.

Joseph Moore, 161 East 89th street, was low bidder, at \$31,945, for reconstruction of outlet sewers in 28th and 29th streets, between East River and First avenue, and in First avenue, between 28th and 29th

streets; Joseph Burns, 147 East 125th street, was low bidder, at \$6,840.50, for building a sewer in 212th street, between Harlem River and Broadway; Concetta Marrone, 414 East 116th street, was low bidder, at \$5,787.28, for building sewer in West 153d street, between Riverside Drive and Broadway.

**Schenectady, N. Y.**—The Board of Contract and Supply has awarded contract to Beckwith Brothers, 119 Lafayette street, for constructing a sewer on Turner avenue.—Charles W. Trumbull, City Engineer.

**Syracuse, N. Y.**—Contractor Charles Whitney broke all records for low bidding for sidewalk construction at a meeting of the Board of Contract and Supply, when he submitted a per square foot bid of 8½ cents for a comparatively small concrete walk. It was not only the lowest bid for this season, which has been marked for the low records made, but as well as for all other seasons within the memory of members of the present city administration. The highest bid submitted was well under 11 cents a square foot, the majority crowding the low-record price and the average being close to 9 cents. The low bid submitted by Mr. Whitney was for the building of a walk in Randall avenue, the total of the contract amounting to but \$341.25, whereas throughout the season the largest jobs, amounting to \$2,000 or \$3,000, have brought the figure down to not lower than 9 cents until yesterday.

There were fifteen sidewalk contracts awarded by the Board, the largest number let this year, resulting in the cleaning up of a large part of the sidewalk awards that were on the waiting list. The sidewalk contracts awarded, together with the successful bidders, the total of the contract and the price per square foot bid, was as follows:

Sidewalk on the east side of University avenue, from Ashworth place to Water street, Warren H. Cross, \$213.50 rate, .09. West side of North Beech street, from Burnet avenue to the Erie Canal, Warren H. Cross, \$204.83; rate, .0999. Both sides of Boyden street, from Pattison street to Vine street, Warren H. Cross, \$328.50; rate, .09. Both sides of South Lowell avenue, from Coleridge avenue to Tompkins street, Artificial Paving Company, \$263.20; rate, .094. Northwest side of South Beecher street, from Graves street to Jasper street, Warren H. Cross, \$178.92; rate, .0994. Both sides of Sizer street, from Orange street to Renwick avenue, Artificial Paving Company, \$186; rate, .10. South side of Danforth street, from Salina street to Park street, Artificial Paving Company, \$77; rate, .10. West side of Teal avenue, from Burnet avenue to Boyden street, Charles Whitney, \$511.75; rate, .089. Both sides of Randall avenue, from Purple street to Colvin street, Charles Whitney, \$341.25; rate, .0875. Both sides of East Genesee street, from Westcott street to Beech street, Salt City Paving Company, \$202.80; rate, .104. East side of McBride street, from Laurel street to Butternut street, Artificial Paving Company, \$255; rate, .10. Northwest corner of Turtle and Lodi streets, Albert Gaffey, \$79.68; rate, .1099. South side of East Water street, from University avenue to Pine street, Artificial Paving Company, \$61.20; rate, .09. Both sides of Vine street, from James street to Dorothy street, Artificial Paving Company, \$59.85; rate, .095. South side of Van Buren street, from No. 212 to Orange street and from State street to Grape street, and on the north side of Van Buren street, from No. 213 to Orange street, and from No. 107 to No. 119, Artificial Paving Company, \$117; rate, .09.

**West Seneca, N. Y.**—M. Joyce & M. Heltz, city, have been awarded contract for constructing 14,400 square feet concrete sidewalks at 10 cents per square foot, including excavating, filling and laying; E. Harpler, Buffalo, bid 11 cents per square foot for sidewalks, 50 cents per cubic yard, for excavating and 25 cents for filling; Charles E. Ginther, Buffalo, bid 11½ cents straight; American Concrete Company, Buffalo, sidewalks, 11½ cents; excavation, 30 cents per yard, and filling, 15 cents; Liberty Concrete Paving Company, Buffalo, 10½ cents straight; People's Paving Company, Buffalo, sidewalks, 9½ cents per square foot; excavation, 50 cents per cubic yard; filling, 25 cents; W. L. Mall, Gardenville, 12 cents straight; William F. Wilburg, Forks, 12 cents straight.—E. H. Cosgrove, Town Clerk.

**Cando, N. D.**—Simpson & Moore, Blsbee, N. D., received the contract, at \$2 per foot, for sinking a 6-inch tubular well.—H. D. Skinner, City Auditor.

**Fargo, N. D.**—G. W. Haggart has the contract, at about \$25,000, for installing water mains.

**LaMoure, N. D.**—The Board of County Commissioners has let contract for the construction of the new Court House to R. K. Hafsos, of Aberdeen, S. D., his bid of \$62,150 being accepted; the safe and vault work will be done by the Diebold Safe and Lock Company.

The City Council has let contract for the water works system to Gilbert Haggart, of Fargo.

**Akron, O.**—An ordinance has been introduced authorizing the Board of Public Service to advertise for bids and enter into a contract for the placing of signs at every street and alley in the city.

**Columbus, O.**—The Council has awarded the contract for the construction of the new Mechanic street sewer to Lee Everroad, city, at \$13,344.50.

**Dayton, O.**—William Hilt has been awarded the contract, at \$19,894, for constructing the Bolender avenue sewer.

The T. J. Backus Construction Company has secured the contract, at \$7,993, for constructing the Germantown street storm sewer, and Shafer & Dill, at \$3,028, for the Linwood street sewer.

**Defiance, O.**—The contract for the construction of the Ottawa avenue sewer was awarded to George Wilhelm by the Board of Public Service.

**East Liverpool, O.**—The Service Board has awarded the contract for the construction of sanitary sewers on Chester and Buckeye avenues to A. R. Wells and Nagle & Patterson, respectively.

**Findlay, O.**—Hennessey Brothers, of Napoleon, have been awarded the contract for paving the principal street of Acadia at their bid of \$10,615.80.

**Girard, O.**—Clerk McFarlin of Council received bids for grading work on Abbey street as follows: Armstrong & McGlasher, 26 cents a yard; A. C. McKinney, 22 cents a yard; C. B. Aikens, 24 cents a yard. The bid of A. C. McKinney was accepted; the job will cost \$285.34, according to the Engineer's estimate. Contractor Grubb will erect the sidewalk as soon as grading is completed; he submitted a price of 24 cents a square foot for crosswalks at State and Liberty streets, and was instructed to proceed with the work.

**Hamilton, O.**—Following is the tabulation of the bids received by the Board of Public Service in connection with the extension of the water works to East Hamilton and Lindenwald: United States Cast Iron and Pipe and Foundry Company, pipes and specials, \$17,824.10; Massillon Iron and Steel Company, pipes and specials, \$18,753.70; Dimmick Pipe Company, pipes and specials, \$17,998.85; Lynchburg Foundry Company, pipes and specials, \$17,798.10; Bourbon Copper and Brass Works, valves and hydrants, \$2,696; R. D. Wood Company, hydrants, \$1,732.50; James B. Clow & Sons, valves and lead, \$3,606.60; Rensselaer Manufacturing Company, valves, \$966.20; Roe Stevens Manufacturing Company, valves and hydrants, \$2,664.50; Wolf & Co., Hamilton, pig lead, \$2,029.50; Darling Pump and Manufacturing Company, valves and hydrants, \$2,634.40; Morgan Manufacturing Company, valve boxes, \$139.20; Ludlow Valve Company, valves and hydrants, \$2,781.70.

Another connecting link in extending the city electric and motor service to East Hamilton and Lindenwald was consummated when the Board of Public Service awarded contracts for water pipe, pipe specials and pig lead; the contract for pipe and specials was awarded to the Lynchburg Pipe Foundry Company of Lynchburg, Va., at \$17,789.10; the pig lead contract was awarded to James B. Clow & Son, of Chicago, at \$2,017.20.

**Marietta, O.**—Putnam & Price were low bidders for paving with brick Sacra Via street, two blocks, 20 feet on each side of park, through center, at \$1.04, and 40 cents for curbing; also for constructing brick pavement on Warren street, 30-foot street, at \$1.07, and 41 cents for curbing. L. T. Cislser was low bidder for constructing brick pavement on St. Clair street, one block, 30-foot street, at \$1.02, and 12 cents per linear foot for resetting old curb and 41 cents for setting new curb. The totals for all work complete, including storm water sewers, follow: Putnam & Price, Sacra Via street, \$6,014.76; Warren street, \$14,583.49; L. T. Cislser, St. Clair street, \$1,597.52.—James F. Hovey, Clerk, Board of Public Service.

**Marion, O.**—The Board of Public Service has awarded the Kling Hardware Company the contract for improving the sewage disposal plant.

**Newark, O.**—The State Board of Public Works has let the contract for a drainage sewer along the banks of Buckeye Lake to J. H. Spurgeon, Kirkersville, at \$3,492.08.

**Oxford, O.**—The contract for the water connections for the fire supply at the university was awarded to the Murdock Plumbing Company of Cincinnati.

**Piqua, O.**—The Commissioners of Miami County have reconsidered their award of the contract to build a bridge over the hydraulic at South street, which went to the Central Bridge Company of Dayton for about \$1,400. J. S. Small, of this city, who had bid \$1,195 on the plans of the County Engineer, protested at the award; the Com-



missioners reconsidered and he was given the contract. It will be of reinforced concrete.

**Portsmouth, O.**—The Board of Public Service has let contract to Kelley Brothers, city, for constructing a storm water sewer in School alley, between Ninth street and Norfolk & Western Railroad Company's tracks, in Earlytown.—George H. Schneider, President; Martin W. McMahon, Clerk.

**Springfield, O.**—The Board of Public Service awarded the contract for furnishing material and paving material for West Pleasant street, from Center street to the Pennsylvania Railroad bridge, to the Toledo Company, the consideration being \$14,439.

The Board also awarded the following paving contracts: Scottwood avenue, between Monroe street and Delaware avenue, Contractor Joseph Henreddy, of Chicago, \$11,917.35; sheet asphalt will be used; the bid was \$1.19 per yard, the lowest on this kind of paving ever received by the Service Board. Fitchland avenue, from Detroit to Smead avenue, Contractor M. F. O'Sullivan, of Toledo, \$6,597.40; vitrified brick will be used. Earl street, from East Broadway to Woodville, Contractor M. F. O'Sullivan, Toledo, \$4,915.10; vitrified block. Dove lane, from Lagrange to Elm street, Contractor Henry Shehan, \$1,975.50; vitrified brick.

Because some residents want sheet asphalt and others creosoted block, contracts for the repaving of Glenwood avenue were not awarded.

**Upper Sandusky, O.**—The Council has awarded the contract for the Hazel street sewer to B. W. Ernst, of Cleveland.

**Youngstown, O.**—Arrangements are now being made for repaving East Federal street; James McCarron has the contract.

The contract for the grading and paving of 1.33 miles of State road in Hanover Township has been awarded by the County Commissioners to William N. Wright, of Lisbon, for \$12,842.50.

The Board of Public Service let contracts as follows for constructing sewers: Anthony O'Horb, sewer, in Homer and Inna streets, 2,500, and 680 feet of 15-inch pipe sewer and three manholes on Cleveland street; A. F. Scott, 390 feet of 12-inch pipe sewer and three manholes on Highview avenue; W. E. Gartland, 630 feet of 15-inch pipe and 1,770 feet of 12-inch pipe sewer and four manholes on Whitney avenue.—F. M. Lillie, City Engineer.

**Guthrie, Okla.**—W. F. Power has the contract for district sewers Nos. 39 and 40.—E. W. Kinnam, City Clerk.

**Altoona, Pa.**—The Board of Public Works has let contract to Isaac Bender, at 64 cents per foot, for the construction of an 8-inch vitrified clay pipe sewer in 20th avenue.—J. B. Andrews, Chairman.

**Doylestown, Pa.**—T. P. Smart, Philadelphia, has been awarded the contract for constructing a State road from Bristol Township.

**Forest City, Pa.**—The Westmoreland Construction Company, Greensburg, has the contract for constructing sewers.—F. J. Howell & Co., Engineers, Carbondale.

**Greensburg, Pa.**—Rinehart Brothers, East Liverpool, O., have been awarded the contract for constructing a State road in Liongier Borough.

**Harrisburg, Pa.**—Deputy Highway Commissioner R. D. Beman of Pennsylvania has issued a statement on bids on roads in Pike County, saying that on the work in Greene Township the bids ranged from \$26,860.65 to \$70,660.58; the lower figure was submitted by Thomas Meehan & Sons, Ins., of Philadelphia, who proposed for the sum named to build the road entirely of local stone; the highest bid was submitted by John McMenamy, also of Philadelphia, and contemplates the use of native stone bottom and Hendler's quartzite for the top courses of the road; the Hendler's quartzite would be superior to the native stone, and the best bid which is based upon Hendler's stone is that of Meckas & Harvey, of Gouldsboro, whose figure is \$34,353.55. The lowest bid received for the Lehman Township road is from the Herrick Construction Company of Stroudsburg, \$11,954.48, based on native stone bottom and Marcellus shale for the top courses of the road; the same company submitted the lowest bid which contemplates the use of limestone for the top courses, the amount thereof being \$13,252.15; the highest bid received on this road was also from John McMenamy, of Philadelphia, being \$22,728.90.

**Lock Haven, Pa.**—The E. M. Good Company, Lancaster, has been awarded the contract for constructing a State road in Lamar Township.

**McKeesport, Pa.**—Mayor Coleman has signed the ordinance for the repaving of Shaw avenue. All efforts to find some way in which the street railway company can be made pay part of the expense have failed; J. W. Butler is low bidder for the work and is ready to begin at once.

**New Castle, Pa.**—The New Castle Con-

tracting Company has secured the contract, at \$7,250, for grading Scott street.

**Scranton, Pa.**—The Penn Bridge Company, Beaver Falls, Pa., has secured contracts at \$10,515, for constructing the Prospect bridge and at \$6,571 for No. 14 bridge in Port Griffith.

**Stroudsburg, Pa.**—The Herrick Construction Company of Stroudsburg was awarded the contract on September 22 for constructing the stretch of State road between the Bushkill Creek bridge, in Bushkill, to the Riverside Hotel property line, in Lehman Township, Pike County, 7,700 feet, at \$11,959.

**Chattanooga, Tenn.**—The Noll Construction Company, 8 East Sixth street, Chattanooga, has submitted the lowest bid to the Board of Public Works, at about \$30,000, for paving roadway, vitrified brick, curbing and cement sidewalks on Bailey avenue, Oak and O'Neal streets.—H. F. Van Dusen, Chairman Board.

The Park Commission has awarded the contract to E. P. Norris, Duncan avenue and Spruce street, for rebuilding the roadway in Jackson Park, at about \$5,000, involving tile drains 4,800 feet long by 16 feet wide.

**Knoxville, Tenn.**—J. W. Pettis was awarded the contract by the County Board to repair the bridge on the Hardin Valley road near Norman's. J. A. Blair was awarded contract to repair all of the bridges within six miles of Knoxville, not including the "forks" of the river, at the rate of \$23.90 per 1,000 board measure for lumber without painting, and iron at 7 cents per pound. M. F. Maynard was awarded contract to repair all the bridges in the Fourth and Fifteenth Districts, within six miles of Knoxville, at the same price; this includes half of the Boyd's bridge over the Holston River.

**Dalhart, Tex.**—Contract for constructing the sewer system was let to Harris & Law, Farwell.—W. D. Wagner, Mayor; John B. Hawley, Consulting Engineer, Fort Worth.

**Dallas, Tex.**—The bid of the Texas Bitulithic Company for the paving of Ross avenue from Akard street to the Houston & Texas Central with bitulithic has been accepted by the City Commission, as was that of the General Supply and Construction Company for the paving of Jackson street, from Harwood to the Santa Fé Railway, with vitrified brick. The cost of these improvements to the city will be about \$17,500 and to the property owners about \$32,500. Mr. Doran said that he had estimated the cost of the work on Ross avenue, which will be paid for by the city, at \$10,000. This was not to include storm sewers, which he had first thought would not be needed. The Engineer, however, finds that some storm sewer work will be needed. The bid of the Texas Bitulithic Company was to pave Ross avenue from the Houston & Texas Central Railway west to the intersection of North Akard street, at \$2.55 per square yard, for a 5-inch gravel concrete foundation, 1 to 7 mixture, with a five-year maintenance. The report of the Engineer accompanying the recommendation submitted the estimated cost of the work on the basis of the bid as follows: 100 cubic yards extra excavation at 40 cents, \$40; 20 cubic yards concrete, 1 to 7 mixture, \$7.50, \$150; 12,000 square yards paving, bitulithic, five-year maintenance on 5-inch gravel concrete foundation, at \$2.55, \$30,600; 12,000 square yards paving, bitulithic, five-year maintenance, 6-inch bituminous foundation, at \$2.55, \$30,600; 7,660 combined curb and gutter, at 75 cents, \$5,745. Commissioner William Doran's recommendation on the paving of Jackson street, which was adopted, was for the General Supply and Construction Company to lay a vitrified block pavement on Jackson street, between Harwood and the Santa Fé Railway, at \$2.25 per square yard; this price is for a 5-inch gravel concrete base, 1 to 7 mixture, and asphalt filler, all brick to comply with the rattle test as adopted by the city; in view of the fact that the manufacturers of these paving blocks guarantee them to hold up under any traffic for a period of five years, it was recommended that no additional amount be paid to the General Supply and Construction Company as a bonus for a warranty for a like period.

The City Engineer submitted the following tabulation of the bids on the Jackson street work: General Supply and Construction Company—Vitrified brick paving, 5-inch gravel concrete foundation, five-year maintenance, 8,682 square yards at \$2.55, \$20,402.70; vitrified brick paving, 5-inch gravel concrete foundation on asphalt filler, five-year maintenance, 8,682 square yards at \$2.40, \$20,836.80; extra excavation, 150 cubic yards at 60 cents, \$90; removing blocks, 5,206 square yards, 10 cents, \$520.60; concrete curb, 51 cents per linear foot, 1,737 linear feet, \$868.50. Texas Bitulithic Company—Bitulithic paving on 5-inch gravel concrete foundation, five-year maintenance, 7,968 square yards at \$2.55, \$20,319; bitulithic paving, 6-inch bituminous foundation,

five-year maintenance, 7,968.4 square yards at \$2.55, \$20,319.42; combined curb and gutter, 1,737 feet at 75 cents, \$1,317.75; extra excavation, 150 cubic yards at 70 cents, \$105; removing blocks, 5,206 square yards at 10 cents, \$520.60.

**Ennis, Tex.**—The Council has let the contract to Morgan & Franks, of Corsicana, to put down another deep well.

**Ogden, Utah.**—Street work this year consists entirely of concrete curbs and gutters and sidewalks; there has been no street paving or stone guttering; on nearly all work the greater part has been done under private contract, leaving a small amount only in each district to be done under public contract, and for various reasons the price on this scattering work is much greater than it would be under normal conditions; bids run on sidewalks from 16-2-3 cents per square foot up, which is too much except in particular cases, as here exist.—A. F. Parker, City Engineer.

**Salt Lake, Utah.**—Bids for sidewalk construction in three districts were opened and referred to the Sidewalk Committee and City Engineer; there were two bidders for each contract, these being the Wheelwright Construction Company and W. J. Moran.

**National Soldiers' Home, Va.**—Louis Lawson, Norfolk, has been awarded contract for 2,600 square yards of sidewalks at \$1.10 per square yard; Alsop & Pierce, Newport News, bid \$1.23; W. R. Grantham, Greensboro, N. C., \$1.25; Alex. Weston, Hampton, \$1.31; R. H. Richardson & Son, Hampton, \$1.18; Specialty Construction Company, Norfolk, \$1.19; A. H. Temple & Co., Newport News, \$1.50; W. H. Boynton, Hampton, \$1.31875.—John Hume, Treasurer.

**Bellingham, Wash.**—Crane & Co., of Seattle, have been awarded the contract for supplying the water pipe for Sylvan street.

**Everett, Wash.**—Thorsvig & Milley have been awarded the contract for the improvement of Colby avenue to the north line of Division B, by the Board of Public Works. The bids follow: Thorsvig & Milley, \$9,324; L. C. Hall & Co., \$9,724; Ellenson & Thorsvig, \$9,546; the estimate of the City Engineer was \$10,769.

**Hoquiam, Wash.**—The following bids have been received by the city for constructing sidewalks on Aberdeen and Simpson avenues: D. P. Steepes, 34 cents; C. M. Witzel and E. Jopple, 33 cents; Ole Lender, 24½ cents; Mat Strommer, 31 cents (awarded contract); Emil West, 33 cents.

**Mt. Vernon, Wash.**—The contract for the construction of State aid road No. 24, or what is known as the Burlington, Sedro-Woolley and Bellingham Highway, has been awarded to W. T. Stevens, city, at \$4,200.

**Seattle, Wash.**—George W. Walker, city, has been awarded the contract by the city for the improvement of Plum street and other streets, at \$45,884; other bidders were: International Contract Company, 738 New York Block, \$56,262; Krogh & Jensen, \$50,684.—R. H. Thomson, City Engineer.

The following contracts have been awarded by the Board of Public Works for the following local improvement work: Fifteenth avenue West and other streets, grading, etc., Holt & Jeffery, \$36,000; Jones avenue Northwest, and other streets, grading, Seattle Grading Company, \$12,758; North 46th street and other streets, grading, S. Normille, \$19,614; Ninth avenue, Northwest, and other streets, grading, same, \$11,229; Nineteenth avenue Northwest, and other streets, grading, H. D. Masterson, \$3,880; Aurora avenue and other streets, concrete walks, W. H. Smith, \$31,198; Fifth avenue North, regrading, Grant, Smith & Co. & Stillwell, \$16,993; Eleventh avenue North, and other streets, concrete walks, Joe Frank, \$13,804.—R. H. Thomson, City Engineer.

**Tacoma, Wash.**—The Commissioner, of Public Works has awarded the paving contract in local improvement district No. 334 to N. A. Jones for \$25,125; the sand stone paving job in local improvement district No. 406 was awarded to Worter Brothers.

Bids have been received for work in sewer district No. 177 as follows: F. Maruca, \$4,502 (awarded contract); Antonio Farnno, \$6,445; Galluci & Vasone, \$5,641; Antonio Tagarelli, \$6,217; Frank Ricco, \$5,948; Swanson & Peterson, \$6,710; Stole & Sweeney, \$5,983; F. A. Keasall, \$6,551; Lister Construction Company, \$5,618; N. A. Jones, \$6,283; Engineer's estimate, \$7,226.

**Wheeling, W. Va.**—The Board of Public Works has awarded contracts for improvements under the 5 cents levy fund; the contract for paving was awarded to George W. Lemmons at his bid as follows: Excavating, 50 cents per cubic yard; gravel fill, \$1.05 per cubic yard; sanding joints, 5 cents per square yard; laying block, both Bessemer and asphalt, 15 cents per square yard. Other bids received were J. E. Wright Company, excavating, \$1.25 per cubic yard; gravel fill, \$1.37 per cubic yard; sanding, 3½ cents per square yard; laying Bessemer block, 15 cents, and asphalt block, 20 cents

per square yard; R. B. McColloch's bid was excavating, 53 cents; graveling, \$1.20; sanding, 4 cents; laying Bessemer, 18 cents, and asphalt, 23 cents.

The contract for hauling brick and blocks was let to George W. Lemmons as his bid of \$1.80 per 1,000 for Bessemer block; \$1.30 per 1,000 for brick, and \$2 per 1,000 for asphalt.

The contract for laying sewers was awarded to Martin Flanagan.

The contract for rebuilding the culvert over Coal Run on the National road was let to the Spindler-Dudley Company for \$300.

The contract for a wall at Sixth street on the west side of National road was awarded to John Boyd, at his bid of 30 cents per cubic yard, for excavating, and \$5 per cubic yard for stone masonry.

Cumberland, Wis.—The contract for the construction and installation of a new electric light and water plant was awarded to J. G. Robertson, of St. Paul, the consideration being \$17,000.

Mayville, Wis.—Contract for constructing 6,590 feet of sanitary sewer was let to James McCabe, Fond du Lac.

Milwaukee, Wis.—Two bids for the completion of the Grand avenue viaduct were submitted to the County Board Committee on September 18, as follows: The National Engineering and Construction Company, \$372,000 (the contract price of the Newton Engineering Company), allowing for work already completed; James O. Howard, Chicago, \$345,000, allowing for work already done.

New London, Wis.—R. B. Rasmussen, city, has the contract for the construction of a sewer.—N. R. Demming, City Clerk.

Oakfield, Wis.—David F. Moore, Fond du Lac, has contract for the construction of sewer, catch basins and manholes on Second street, Oakfield.—W. F. Sommerfield, Village Clerk.

Waukesha, Wis.—The Advance Construction Company has the contract for the construction of sewers in Bethesda avenue and Randall street, and Braide & Peterson for

sewers in North street, Marie street and St. Paul avenue.—John P. Dey, City Engineer.

Reading, Pa.—Councils have confirmed contracts, as awarded by the Water Board, as follows: Building slow sand filters for the Maiden Creek water supply, to H. E. Ahrens & Co., this city, for \$182,-885.85; furnishing and delivering gate valves for slow sand filters for the Maiden Creek water supply, to the Eddy Valve Company, Waterford, N. Y., for \$3,190.30; furnishing and delivering cast-iron pipes and special castings for the slow sand filters for the Maiden Creek water supply, to the United States Cast Iron Pipe and Foundry Company, for \$18,038.20.

### SCHEDULE OF BIDS FOR BUILDING SLOW SAND FILTERS AT READING, PA.

BIDDER	2-In. Vit. Drains For Vaulting, Complete	Filter House Complete	Total Amount of Bid	BIDDER	2-In. Vit. Drains For Vaulting, Complete	Filter House Complete	Total Amount of Bid
(A) MacArthur Bros. Co., N. Y., N. Y. . . . .	\$1,000.00	\$15,000.00	\$296,328.00	(K) R. A. Malone & Sons, Lancaster, Pa. . . . .	\$350.00	\$11,700.00	\$224,910.00
(B) A. G. Vermilye, . . . . .	250.00	22,000.00	288,762.35	(L) David Peoples, Philadelphia, Pa. . . . .	350.00	21,000.00	220,264.00
(C) Bowman Bros. Co., McKeesport, Pa. . . . .	500.00	12,000.00	281,472.50	(M) Gore Eng. & Cont'g Co., N. Y., N. Y. . . . .	500.00	20,000.00	215,280.25
(D) Joseph P. O'Reilly, Reading, Pa. . . . .	1,500.00	14,160.00	280,436.15	(N) United Ice & Coal Co., H's'b'g, Pa. . . . .	90.28	22,640.00	214,955.58
(E) Clement King Co., Inc., Phila., Pa. . . . .	1,000.00	16,500.00	273,681.20	(O) S. W. Chiles, Reading, Pa. . . . .	500.00	20,000.00	210,513.25
(F) Bunting, Bull Co., Flushing, N. Y. . . . .	750.00	22,000.00	263,815.00	(P) Shanley-Morrissey Co., Inc., N. Y. . . . .	.08	20,350.00	201,455.38
(G) Robert C. Storrie, Philadelphia, Pa. . . . .	500.00	20,000.00	257,058.75	(Q) Nolan Bros., Reading, Pa. . . . .	225.00	16,800.00	195,412.00
(H) Hawman Const'n Co., Reading, Pa. . . . .	540.00	19,159.70	239,576.30	(R) Fehr & O'Rourke, Reading, Pa. . . . .	200.00	16,720.00	190,663.30
(I) N. Y. Cont'l Jewell Filt. Co., N. Y. City . . . . .	870.00	17,400.00	228,329.25	(S) L. H. Focht & Son, Reading, Pa. . . . .	200.00	16,600.00	188,476.70
(J) Millard Construction Co., Phila., Pa. . . . .	300.00	15,900.00	224,918.25	(T) H. E. Ahrens Co., Reading, Pa. . . . .	350.00	21,210.00	182,885.85

Estimated Quantities	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)	(R)	(S)	(T)
Excavation, 115,000 cu. yds. . . . .	\$1.10	\$1.14	\$0.75	\$0.64	\$0.80	\$0.90	\$0.85	\$0.57	\$0.79	\$0.63	\$0.70	\$0.61	\$0.69	\$0.57	\$0.55	\$0.70	\$0.59	\$0.59	\$0.49	\$0.50
1:2:4 Concrete, 15,000 cu. yds. . . . .	6.25	4.75	7.00	5.95	6.85	5.00	5.10	5.23	4.75	5.50	5.00	4.00	4.00	5.00	5.00	3.25	4.00	4.10	4.25	4.30
1:3:6 Concrete, 600 cu. yds. . . . .	6.00	4.00	6.50	6.50	6.85	5.00	5.10	4.14	3.50	4.00	5.00	3.05	4.00	2.58	4.00	3.25	4.00	4.10	4.15	3.25
Brick Masonry, 60 cu. yds. . . . .	7.00	4.00	8.00	8.50	10.00	7.00	10.00	7.50	6.00	6.00	12.00	5.10	6.00	3.79	10.00	12.00	10.00	5.50	6.00	7.50
Broken Stone and Gravel for Underdrains, 5,050 cu. yds. . . . .	3.00	3.00	2.00	4.00	2.25	2.80	2.50	2.45	2.40	2.45	1.00	2.50	1.50	2.50	1.55	2.00	2.65	2.15	1.85	1.50
Placing Filter Sand, 21,850 cu. yds. . . . .	.65	.50	1.00	1.50	.80	.55	.60	.65	.37	.50	.75	.80	.40	.35	.45	.55	.45	.38	.50	.35
Cinder Filling, 260 cu. yds. . . . .	1.10	2.00	1.00	1.50	1.00	1.00	1.00	.75	.50	.50	1.00	1.50	1.00	1.25	1.00	.65	.70	.75	.75	.69
Uncoursed Rubble Masonry, 1,600 cu. yds. . . . .	3.00	4.00	4.00	6.00	2.75	3.50	4.00	3.85	3.00	4.00	3.50	5.25	3.00	2.07	4.50	3.50	2.40	2.17	2.00	3.25
Vitrified Brick Gutters, 770 sq. yds. . . . .	.55	.75	.50	1.15	.60	.75	.75	.52	.30	.50	.70	.50	.50	.40	.70	.69	.42	.35	.35	.33
Roadway, 6,400 sq. yds. . . . .	.85	1.25	1.25	.95	1.15	1.10	1.00	1.30	.58	.80	1.00	1.00	1.15	1.50	.90	.90	.95	.75	.95	.48
Walks, 720 sq. yds. . . . .	.50	.60	1.00	1.10	.85	1.00	.75	.125	.30	.45	.50	.75	.75	1.00	.60	.50	.80	.50	.60	.35
Sodding, 17,500 sq. yds. . . . .	.25	.20	.50	.25	.25	.25	.25	.35	.22	.24	.40	.25	.25	.28	.20	.15	.22	.25	.22	.22
Seeding, 9.5 Acres. . . . .	120.00	15.00	200.00	90.00	50.00	100.00	30.00	60.00	40.00	50.00	50.00	50.00	50.00	100.00	25.00	73.40	60.00	20.00	15.00	40.00
30-In. Split. Vit. Pipe, 2,020 lin. ft. . . . .	1.60	1.50	2.00	1.61	1.50	1.30	2.00	1.55	1.50	1.50	1.22	2.00	3.00	1.43	1.25	1.75	1.14	1.29	1.16	1.47
21-In. Vit. Pipe, 345 lin. ft. . . . .	1.25	.75	1.50	1.51	1.10	1.00	1.50	1.76	.85	1.10	.75	1.00	1.50	.86	1.10	1.25	.75	.88	.70	.95
15-In. Vit. Pipe, 440 lin. ft. . . . .	.75	.50	1.00	1.30	.45	.80	1.00	1.36	.65	.65	.40	.90	.75	.53	.70	.80	.42	.56	.40	.50
12-In. Vit. Pipe, 615 lin. ft. . . . .	.60	.30	.75	1.20	.38	.60	.75	.96	.55	.50	.30	.60	.50	.39	.35	.65	.30	.46	.30	.38
6-In. Vit. Pipe, 200 lin. ft. . . . .	.30	.10	.25	.40	.15	.20	.50	.72	.20	.25	.20	.25	.20	.23	.20	.37	.15	.18	.16	.20
4-In. Vit. Pipe, 35 lin. ft. . . . .	.25	.06	.25	.30	.10	.20	.50	.52	.15	.25	.15	.20	.15	.23	.20	.32	.13	.16	.20	.20
10-In. Split Underdrains, 12,000 lin. ft. . . . .	.20	.20	.25	.40	.20	.17	.25	.90	.17	.17	.30	.40	.40	.28	.30	.33	.21	.21	.20	.20
Reinforced Concrete Conduit, 1,220 lin. ft. . . . .	2.50	8.00	5.00	9.50	3.00	6.30	5.00	6.40	4.40	3.75	4.00	4.55	5.00	2.00	5.00	2.10	2.80	2.28	7.30	1.90

### FURNISHING and DELIVERING CAST-IRON PIPE and CASTINGS

(A) Drummond Iron Works, Ltd., Reading, Pa.; (B) U. S. Cast Iron Pipe & Foundry Co., Philadelphia, Pa.; (C) Camden Iron Works, Camden, N. J.; (D) Donaldson Iron Co., Emaus, Pa.

### FURNISHING AND DELIVERING VALVES

(E) Kennedy Valve Mfg. Co., Elmira, N. Y.; (F) Darling Pump & Mfg. Co., Ltd., Williamsport, Pa.; (G) Camden Iron Works, Camden, N. J.; (H) Eddy Valve Co., Waterford, N. Y.

	ESTIMATED QUANTITIES UPON WHICH BIDS ARE COMPARED				Total Amount  of Bid	ESTIMATED QUANTITIES UPON WHICH BIDS ARE COMPARED								Total Amount  of Bid	
	540 Net Tons	0.4 Net Tons	134,000 Pounds	56,000 Pounds		2	4	3	12	36	2	2	1		
	B. and S. Pipes, per Net Ton	Flange Pipes, per Net Ton	B. and S. Special Castings, per Lb.	Flange Special Castings, Per Lb.		GATE VALVES									
						36-In.	30-In.	24-In.	16-In.	12-In.	10-In.	6-In.	4-in. Ch'k Val.		
(A).....	\$24.85	\$40.00	\$0.0325	\$0.0365	\$19,834.00	(E)	\$305.50	\$216.20	\$120.35	\$61.25	\$26.00	\$23.65	\$10.30	\$6.00	\$3,581.75
(B).....	22.55	38.00	.029	.035	18,038.20	(F)	306.00	218.00	100.00	50.00	25.00	20.00	8.00	6.00	3,346.00
(C).....	23.60	29.80	.0245	.044	18,502.92	(G)	325.00	350.00	168.00	68.00	32.00	25.00	12.00	11.00	4,607.00
(D).....	23.87	35.00	.035	.0425	19,973.80	(H)	250.00	190.00	92.00	50.00	27.30	21.50	9.50	9.50	3,190.30



## PERSONALS

AHLM, C. E. F., Cleveland, O., has been retained as consulting engineer in connection with the municipal lighting plant to be built at Lima, O.

BOOTHROYD, S. L., instructor in topographical engineering in Cornell University, Ithaca, N. Y., has been appointed assistant professor of that subject, and K. B. Turner has been promoted from instructor to assistant professor of hydraulics.

CARLSON, SAMUEL A., Mayor of Jamestown, N. Y., delivered a lecture September 24, before the University Club, at Jamestown, on Municipal Government by Commission.

CROTHERS, AUSTIN L., Governor of Maryland, and a party of officials and citizens, recently inspected the work on Baltimore's sewer system. Other members of the party were: Gen. Francis E. Waters, Acting Mayor Numsen, R. Brent Keyser, Gen. Felix Agnus, Stewart Olivier, Walter W. Abell, R. H. Edmonds, Gen. John Gill, Douglas H. Thomas, Reuben Foster, W. W. Cherry and the members of the Sewerage Commission.

FOREMAN, DR. THOMAS F., Syracuse, N. Y., has been appointed Deputy Health Officer, vice Dr. J. N. F. Elliot, resigned.

GOFPOLDT, F. C., Fire Chief, North Bergen, N. J., has been given a handsome fire trumpet by his own company, the Woodcliff Engine Company.

FRINK, PROF. F. G., Ann Arbor, Mich., formerly of the civil engineering faculties of the University of Michigan and of the University of Illinois, has accepted the position of professor of railroad engineering in the University of Oregon, Eugene, Ore.

HARDEE, CAPT. WILLIAM J., City Engineer of New Orleans, La., is on his vacation and W. J. Warren, by direction of Mayor Martin Behman, has charge of the Department during his absence.

HAYNES, STANFORD L., Springfield, Mass., has been appointed Water Commissioner, succeeding Everett G. Stone, resigned.

KNAPP, W. A., Instructor in Structural Engineering; R. B. Wiley, Instructor in Hydraulic Engineering; J. H. Lowry, Assistant in Surveying; N. A. Lago, Assistant in Railway Engineering, are recent appointments made in the School of Civil Engineering, Purdue University.

KOUNTZ, ALBERT E., McKeesport, Pa., has been appointed a member of the Board of Health, succeeding the late Dr. Joseph B. Clifford.

McLAUGHLIN, R. F., Norfolk, Va., has been appointed Fire Chief, succeeding J. H. Hegebein.

MILIAN FRANCISCO, Mayor of West Tampa, Fla., committed suicide September 25.

PARSONS, FRANK, Professor of Political Economy, Boston University, well known as an advocate of Municipal Ownership, died September 26.

POOLE, M. V., Mayor of West Long Branch, N. J., is candidate for Mayor again, having his name on both the Republican and Democratic tickets.

POWER, J. CLYDE, Indianapolis, Ind., Superintendent of Parks, is visiting Seattle, with a view to residing in the Northwest.

PRIOLEAU, PHILIP, City Engineer of Jacksonville, Fla., is temporarily in charge of parks since the removal of Thomas J. Hogan, Superintendent.

SCHLEY, J. T., and L. Schwartz, Mobile, Ala., have been elected members of the Board of Public Works of the city.

SHAW, SIR EYRE, London, England, died recently at his residence, Folkstone. Capt. Shaw virtually created the British metropolis Fire Department.

SILL, WILLIAM F., Taylor, Tex., Chief of the Fire Department, has resigned and will move his residence to Kansas. By his resignation Assistant Chief R. J. Eckhardt becomes Chief.

SMITH THOMAS W., Huntsville, Ala., has been elected Mayor.

THOMSON, R. H., City Engineer, Seattle, Wash., has sailed for Europe to attend the meetings of the International Good Roads Association. Assistant Engineer D. W. McMorris will be in charge during Mr. Thomson's absence.

WOODWARD, JAMES G., Atlanta, Ga., has been nominated at the primary election as candidate for Mayor, which practically insures his election. Mr. Woodward has already served several terms as Mayor.

## PATENT CLAIMS

897,755. Combination Fresh and Salt Water Hydrant. Frank Malloye, San Francisco, Cal. Serial No. 416,577.

A combination salt and fresh water hydrant, comprising a shell or casing, a vertical partition dividing the interior of said casing into two conduits, a nozzle for each conduit, a valve for closing one of said nozzles, having a stem, and a tubular connection formed integral with said partition and casing, through which said stem passes, substantially as described.

898,136. Sewer-gas Trap. John P. Putnam, Boston, Mass. Serial No. 276,899.

In a water seal trap the combination of an inlet arm and an outlet arm, each substantially equal in area to that of the fixture waste pipe, a shallow unobstructed reservoir chamber between the two having a depth substantially equal to the diameter of the waste pipe, but having a length and breadth much greater than this diameter, a shallow bend connecting the bottom of the inlet arm with the bottom of the chamber, and an outlet opening of area substantially equal that of the waste pipe opening out of the side of the chamber at some distance above its bottom.

898,205. Drainage System. Karl Fliskow, New York, N. Y. Serial No. 416,917.

The herein described drainage system, consisting in the combination with the drainage basin and corner gutter, of side gutters leading into the drainage basin and short bridges arranged between the side gutters and the corner gutter, said bridges having slanting and rounded side surfaces and leading from the sidewalk down to the roadway.

898,428. Cement-pipe-making Machine. Herman Besser, Alpena, Mich. Serial No. 377,776.

A tile machine comprising a hopper, a reciprocating tamper suspended above the hopper and moving up and down through the hopper at each stroke, a stationary depending guide surrounded by the tamper, a table capable of movement beneath and away from the hopper, a core carried by and stationary with the table and independent of the guide, and a mold mounted on the table, the mold surrounding the core and removable relative thereto and to the table.

898,510. Connection for Culvert-sections. Julius H. Schlaffy, Canton, Ohio, assignor to Edward A. Langenbach, Canton, Ohio. Serial No. 424,526.

In a connection for culvert sections, culvert sections provided with notched and unnotched ends respectively, the unnotched ends provided with an unclosed lapped joint, said culvert sections being telescopically and rotatably connected together, whereby the telescopic sections are transposed, substantially as and for the purpose specified.

898,557. Ditching-machine. Benjamin Clements, Crookston, Minn. Serial No. 408,387.

A ditching machine comprising a frame, a transversely disposed rotary auger wheel provided with alternately arranged cutters, and scoops or buckets adapted to cut transversely of a ditch and remove the loose dirt, said cutters and scoops or buckets being rigid with and projecting from the periphery of the auger wheel, and means for rotating the auger wheel.

898,593. Digging and Loading Machine. Nels H. Nelson, Willmar, Minn. Serial No. 409,387.

In a machine of the kind described, the combination with a wheel-supported main frame, of an upstanding frame fixed thereon and having near its top a plate with a segmental slot therein, a mast pivotally mounted near one end of the main frame and adapted to stand plumb up and also to be folded upon the main frame, a bracket fixed on the mast, a removable bolt passed through the bracket and said slot in the plate and a nut on the bolt for clamping the bracket and the plate together.

898,735. Water-purifier. Walter H. Green, Chicago Heights, Ill., assignor to Kennicott Water Softener Company, Chicago, Ill., a Corporation of Illinois. Serial No. 397,960.

In a water-purifying apparatus, the combination with a precipitating-tank, of a water-box having a fixed discharge and containing a float, a reagent-supply pipe having a fixed discharge, and a movably-supported tubular extension of said pipe forming an overflow for the reagent-supply and operatively connected with said float, for the purpose set forth.

898,863. Positive Water-meter. Edmund J. Fryer, Claremont, Western Australia, Australia, assignor of one-half to Edward Bolton Roark, Claremont, Western Australia, Australia. Serial No. 415,214.

In a water meter of the type set forth, in combination, a cylindrical casing constructed with independent measuring and discharging chambers, said casing being formed with top and bottom walls closing said chambers, the top wall being formed with two inlet openings communicating with the measuring chamber at each side of the discharge chamber and with an outlet opening communicating with the discharge chamber, a blade mounted for oscillating movement in the measuring chamber, a shaft carrying the blade and projecting beyond the top wall, a pinion on the projecting end of the shaft, a pivotally mounted segment on the top wall, said segment having teeth meshing with said pinion, a valve pivotally mounted on the top wall and having a chambered under face proportioned to cover said outlet port and either of said inlet ports and an operative connection between said segment and said valve for operating the latter from the former.

## INCORPORATIONS

Arc Lamp Company of America, New York, N. Y.; to manufacture electric lighting machinery and lamps; capital, \$100,000. Incorporators: Edward B. Rich, 470 17th street, Brooklyn; George S. Jacob, 113 Liberty street; Robert S. Kennedy, 502 West 151st street, both of New York.

Buffalo Street Cleaning Company, Buffalo; general construction, water works, sewers, canals, roads and bridges; capital, \$10,000. Incorporators: Seward H. Miltenner, William J. Donovan, Edward H. Murphy, Buffalo.

Crossley Machine Company, Trenton, N. J.; electrical engineers, machinists, foundry and manufacturing business; capital, \$125,000. Incorporators: David Crossley, Harry D. Leavitt, Donald M. Miller, Trenton.

Des Moines Electric Company, Augusta, Me.; to make and sell electric machinery; capital, \$3,500,000. President and treasurer, J. Berry; Clerk, L. A. Burleigh, both of Augusta.

Great Northern Engineering and Supply Company, New York, N. Y.; general contractors; capital, \$10,000. Incorporators: William S. Congalton, 246 Water street; Henry Woog and George M. Brooks, 43 Wall street, all of New York.

Hudson Highlands Quarries Company, Cold Spring, N. Y.; to quarry and crush stone, deal in stone, bricks, lime and cement; capital, \$100,000. Incorporators: Clarence H. Sara, William H. Truesdell, J. Bennett Southard, Cold Spring.

Johns River Heat, Light and Power Company, Wilmington, Del.; capital, \$500,000. Incorporators: Elisia W. Meloney, Avondale, Pa.; Benjamin F. Grott, Lancaster, Pa.; Charles B. Evans, Newark, Del.

Stone Quarries Company, New Brunswick, N. J.; to mine and operate quarries, real estate, etc.; capital, \$125,000. Incorporators: George Mallett, George McCleary, L. Shearn, as above.

Springfield Light, Heat and Power Company, Springfield, O.; capital, \$1,000,000. Incorporators: Joshua D. Price and others.

S. H. Trullitt & Co., Camden, N. J.; to manufacture wrought iron, cast-iron pipe, castings, engines and fittings; capital, \$50,000. Incorporators: E. R. Hansell, George H. B. Martin, John A. MacPeak, as above.

## TRADE NOTES

**Cast Iron Pipe.**—Chicago—Settings ranging from 100 to 500 tons are fairly numerous, but larger contracts are scarce. Quotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. San Francisco—The improvement recently noted has not continued. Quotations: 4 to 6-inch, \$36; 8 to 12-inch, \$35; over 12-inch, \$34. Birmingham—In view of recent lettings, prices are firmer. Quotations: 4 to 6-inch, \$24; 8 to 12-inch, \$23; over 12-inch, \$22.

**Pig Lead.**—The market is weaker. Soft Missouri brands can be had at 4.57½c., New York, and 4.32½c., St. Louis. The American Smelting and Refining Company continues to ask 4.60c., New York, and this is also the price of some other producers.

**Lift Bridges.**—The Scherzer Rolling Lift Bridge Company, Monadnock Block, Chicago, Ill., publish a book describing and illustrating some of their bridges. With the advance of civilization the interests of commerce and navigation have called for a bridge to span navigable waters and movable to allow the passage of vessels. Great progress has been made in this direction in recent years, especially with the introduction of the Scherzer rolling-lift bridges. Scherzer bridges have been built in various parts of the world, and their superior features have become well known to engineers, railroad owners, municipal officials and others interested in improved bridge construction. Besides numerous facts and diagrams, the booklet presents many photographic views of Scherzer bridges built throughout the United States, and information regarding these structures as erected in Mexico, South America, Egypt, India, Russia, Holland and Great Britain. This is the third revised and enlarged edition of the Scherzer book, the author being Albert H. Scherzer, president and engineer of the company, who acknowledges his indebtedness to the inspiration, inventions and achievements of his deceased brother, William Scherzer, which made possible the construction of the Scherzer rolling-lift bridges illustrated and described. Mr. Scherzer's efforts will continue to be concentrated on the development of the Scherzer bridge to successfully meet any possible requirements in length of span, width of bridge or artistic design.

**New York, N. Y.**—The annual report of the Public Service Commission gives the following account of the ownership of the lighting companies in New York City: The Consolidated Gas Company owns \$500,000, the total issue of the Astoria Light, Heat and Power Company, \$8,991,300 of the \$9,000,000 preferred stock of the New Amsterdam Gas Company, \$12,154,200 of the \$12,165,000 common stock of the same company, \$45,041,000 of the \$45,051,000 of the New York Edison Company, \$1,886,200 of the \$3,500,000 of the New York Mutual Gas Light Company, \$4,096,100 of the \$4,295,700 preferred stock of the Standard Gas Light Company, \$4,796,200 of the \$5,000,000 common stock of the same company, \$1,641,800 of the \$1,649,500 preferred stock of the United Electric Light and Power Company, \$3,654,000 of the \$3,697,100 common stock of the same company, \$2,500,000, the total issue of the preferred stock of the Westchester Lighting Company, and \$10,000,000, the total issue of the common stock of the same company.

**Electrical Show.**—The New York Electrical Show, held at Madison Square Garden, October 3-14, under

the auspices of the lighting companies of New York City, George F. Parker, general manager, was unique in the fact that the entire exercises were conducted by phonograph. Governor Hughes opened the exhibition in this manner, although, as a matter of fact, he was speaking in the Presidential campaign hundreds of miles away. Other phonographic speakers were the presidents of the national and local electrical bodies. Musical performances were also delivered by phonograph. Mr. Edison opened the proceedings by phonograph in his first public speech.

**Sewerage Company.**—The first private sewerage company in Lebanon, Pa., was organized in the law offices of George T. Spang. The company will be known as the Cumberland Street Sewer Company, and will lay an 18-inch clay pipe sewer to drain flood and back-up water from the cellars of the stockholders, all of whom reside or have their property on Cumberland street, between Fifth street and Pheasant alley, or on Seventh street, near Cumberland. The following officers were elected at the meeting: President, John Hunsicker, Sr.; secretary, George T. Spang, Esq.; treasurer, Alderman David C. Smith; executive committee, John Hunsicker, Sr., George T. Spang, Harry A. Andrews, Dr. George M. Focht, Frank S. Becker, Emanuel M. Hottenstein, Daniel P. Witmeyer and William H. Bollman. The meeting was addressed by Civil Engineer George W. Hayes, who explained the engineering details of the proposed sewer. His profile map of the cellars to be drained and other plans were exhibited to the company and accepted, and Mr. Hayes was retained as the engineer to superintend the work. Mr. Hayes was authorized to draft specifications and to advertise for bids for the work, which will be begun very shortly and is to be completed before Christmas.

**Concrete Reinforcement.**—The William B. Hough Company, Monadnock Block, Chicago, have issued a little book describing their reinforcing bar for concrete work. Reinforcing steel should have the highest elastic limit, greatest ductility and a mechanical bond sufficient to develop the strength of the steel, and it is claimed by this company that their bar is nearer the ideal than any other so far brought out. In the making of this reinforcing, square bars of low carbon steel having an elastic limit of approximately 30,000 pounds and an ultimate strength of about 55,000 are twisted cold. By this process both the elastic limit and ultimate strength are increased. The elastic limit rising to between 55,000 and 65,000 pounds. As the steel is low carbon in the first place and consequently ductile, there is no change in its ductility by the twisting. Furthermore, in the process of twisting cold any scale that is present will be broken off, helping to make a better bond, and any weaknesses in the bar will be shown up in uneven twisting. It is stated that the bars can be bent cold around their own diameter without showing signs of crack or break, which is pointed out as a good indication of their ductility and ability to stand shock.

**Non-skidding Tires.**—One of the most remarkable non-skid tires ever put on the market is that which is being manufactured by the Firestone Tire and Rubber Company, of Akron, O. It is called the "Firestone Non-Skid," which name is placed in raised letters around the

body of the outer tire casing. Thus the name itself prevents the car from skidding. Persons who have seen this tire in action declare that it is the nearest approach to a perfect non-skid tire that has ever been invented. It has been tried out many times, and has been found to be highly satisfactory in every respect.

**Cheap Power.**—There is prospect of the establishment of a new enterprise in Rochester, N. Y., as a result of an inspection in Kingston, Ontario, Can., by Rochester capitalists. At the request of a few Rochester men, a delegation of engineers went to Kingston to witness a test of the Hopcroft gas producer, whose object is to effect a saving in the cost of developing power for all kinds of work. The inventor, Mr. Hopcroft, of England, was in Rochester recently in consultation with capitalists, who are so well satisfied with the test at Kingston that they have practically determined upon the establishment of a plant in Rochester for the manufacture of the gas producer. By means of this invention, it is claimed, one horsepower per year can be developed at an expenditure of \$5.50. The plan is to replace steam, water or electric power with gas power in manufacturing plants, and for heating, cooking and supplying power for generating electricity for lighting. The gas produced by the Hopcroft process cannot be used directly for illuminating purposes. The process is said to be in use in several Canadian cities and has been in use in Europe for twenty years.

**Power Company Reorganization.**—The Northwest Light and Water Company of North Yakima, Wash., has purchased the Kennewick Electric Company's light and water plant at Kennewick, paying for it \$75,000. The same company has taken over the Pasco Light and Water System and will take possession at once. The officers of the purchasing company are Robert Strahorn, President; A. G. Smith, Secretary, and George Arrow-smith, Manager. The Northwest Light and Water Company will extend its lines from this city to the several towns along the Northern Pacific Railroad as far as Pasco. The capacity of the plant is to be materially enlarged. Several huge irrigation companies are depending on the company for power with which to pump water on to the high land in the vicinity of Kennewick.

**Electrical Trade Good.**—According to a stockholder of the National Carbon Co., who recently visited Cleveland, O., the headquarters of the corporation, the plants are now being operated practically at full capacity, which compares with about one-half of total production during the first months of the year. Demand for electrical supplies is increasing steadily. These purchases are said to emanate principally from heavy consumers, who were obliged to allow their stocks to run low during the panic period. New business is also gaining, which shows that fresh projects are now being taken up. Earnings of the National Carbon Co. to date have averaged very satisfactorily, and the total result will be larger for the full fiscal year, comparing, as they will, with the depression during the last five months of the previous year.

**Gas Producer.**—The Minneapolis Steel and Machinery Co., Minneapolis, Minn., has been awarded a contract by the town of Hartley, Ia., for supplying an 80-horsepower Muenzel producer gas engine and suction gas producer for the municipal electric light plant.



## PROPOSALS

### REMOVAL AND DISPOSAL OF GARBAGE.

Reading, Pa., September 23, 1908.

Sealed proposals will be received at the office of the City Clerk until 7 P.M., Monday, October 12, 1908, for the collection, removal and disposal of all garbage and offal, and dead animals in the city of Reading, Pa., for the period of three (3) and five (5) years.

Each bid or proposal must be accompanied by a bond executed by a trust company existing under the laws of the State of Pennsylvania, or authorized to do business in the State of Pennsylvania, or a certified check in the sum of two thousand (\$2,000) dollars, and the successful bidder will be required to enter into a contract bond in the sum of ten thousand (\$10,000) dollars; said bond to be executed by a trust company existing under the laws of Pennsylvania, or authorized to do business in the State of Pennsylvania.

Specifications of the works can be seen and proposal bonds had at the office of the City Engineer.

All proposals must be endorsed "Proposal for the collection, removal and disposal of all garbage and offal, and dead animals in the City of Reading," and addressed to the Department of Garbage, care of Caleb Weldner, City Clerk.

The right is reserved to reject any or all bids.

(14-15)

### MECHANICAL FILTER PLANT

Cohoes, N. Y.

The Board of Water Commissioners of Cohoes, N. Y., have decided upon November 2, 1908, as the final date for the filing of plans and specifications with approximate estimate of the cost of a mechanical filter plant for the City of Cohoes, N. Y.

Plans must be on file at the office of the Water Commissioners on or before the above mentioned date.

H. L. SHAVER, Pres.

### WATER WORKS Notice to Contractors

Passaic, N. J.

By direction of the City Council of the City of Passaic, New Jersey, proposals are hereby invited for:

First—Distributing, laying, etc., about thirty-seven (37) miles of six (6) inch to twenty (20) inch pipes, hydrants, gate valves, specials, etc.

Second—Furnishing and delivering the said pipes, hydrants, gate valves, specials, etc.

Third—Furnishing a new water supply from three (3) million gallons per day up to twelve (12) million gallons per day, to be taken from wells or surface streams.

All proposals must be in conformity with the forms of proposal and specifications adopted by the Committee on Water Supply, of which printed copies may be obtained at the office of the City Clerk or the City Surveyor of said city.

The city reserves the right to reject any and all proposals. All proposals must be submitted in a sealed envelope addressed to the Committee on Water Supply, care of the City Clerk, on or before the thirtieth day of October, 1908, at 8 o'clock P.M.

A certified check for one thousand dollars to the order of the City Treasurer of the City of Passaic, N. J., must accompany each bid, to be forfeited to the city if the bidder in the event his proposal is accepted, shall not within ten days thereafter enter into proper contract for carrying out his proposal.

GEORGE K. ROSE,

JOSEPH SPITZ,

HERMAN FRIEND,

Committee on Water Supply of the City Council of the City of Passaic, N. J. (12-18)

### GRADING, CURBING, PAVING AND SEWERING.

Charleston, W. Va.

The Board of Affairs of the city of Charleston, West Virginia, will, until 3 o'clock P. M. on the 9th day of October, 1908, receive sealed bids for grading, curbing, paving and sewerage certain portions of the streets and alleys in the city of Charleston, the total amount of the work aggregating about \$300,000. The right reserved to reject any and all bids, and to let the work as a whole or in part, or to suspend or stop work during unfavorable weather.

For further information call or address W. A. Hogue, City Engineer, Charleston, Kanawha County, West Virginia.

### SANITARY SEWERS.

Winston, N. C.

Bids are invited for constructing nearly three miles of sanitary sewers, of sizes from 6 to 12 inches in the city of Winston, N. C., construction to begin immediately. Bidders will be required to file a certified check in the sum of \$500, which will become a forfeit to the city of Winston if the bidder to whom the work is awarded fails to enter into contract within one week after its award. The successful bidder will be required to file an acceptable bond to the amount of 20 per cent. of his bid as a guarantee of faithful performance of the work. The city of Winston reserves the right to reject any or all bids.

Detailed plans and specifications may be seen at the office of the City Engineer.

Interested parties are invited to visit the site of the work at once.

O. B. EATON, Mayor.

J. N. AMBLER, City Engineer.

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## SEWER PIPE

It is made on the ground by the opening and is therefore thoroughly hardened before being placed in the trench.

Ordinary labor may be employed in making it.



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**REINFORCED CONCRETE PIPE CO.**  
JACKSON, MICHIGAN

# GENERAL WORK, CITY HALL

## Department of Public Works

Chicago, Oct. 1, 1908.

Sealed proposals will be received by the city of Chicago until 11 A.M. Monday, November 2, 1908, at room 705, 200 Randolph street, for the general work required in connection with the construction of the new city hall building to be erected on the west half of block 39, original town of Chicago, according to plans and specifications on file in the office of Holabird & Roche, architects, 16th floor, Monadnock block.

Proposals must be made out upon blanks furnished at said office, and be addressed to said department, indorsed, "Proposals for New City Hall, General Work," and be accompanied with five (5%) per cent. of amount of bid in money or a certified check for the same amount on some responsible bank located and doing business in the city of Chicago and made payable to the order of the Commissioner of Public Works, which deposit will be returned to the bidder if the bid is rejected, and if the bidder is successful, upon bidder entering into contract with said city of Chicago, and giving such bond as may be required for the satisfactory performance of the same within five days from the date of notification that the said contract and bond are ready for execution.

The Commissioner of Public Works reserves the right to reject any or all bids. A deposit of \$500 will be made in room 705, 200 Randolph street, to insure the

safe return of plans and specifications.

No proposal will be considered unless the party offering it shall furnish evidence satisfactory to the Commissioner of Public Works of his ability, and that he has the necessary facilities, together with sufficient pecuniary resources, to fulfill the conditions of the contract and specifications, provided such contract should be awarded to him.

Companies or firms bidding will give the individual names, as well as the name of the firm, with their address.

JOHN J. HANBERG,  
Commissioner of Public Works.

By PAUL REDIESKE,  
Deputy Commissioner.  
(15-18)

# FOR STONE ROAD.

Haworth, Bergen County, N. J.

Sealed proposals for the grading, macadamizing and otherwise improving of Valley Road, Haworth Drive, and a portion of Flatts Road, lying in the Borough of Haworth, Bergen County, New Jersey, a distance of 16,527.06 feet, will be received by the Borough Council of the Borough of Haworth, at the office of the Borough Clerk at Haworth, New Jersey, up to 8 P.M. on Monday, October 19th, and will be publicly opened at 8.15 P. M. on the 19th day of October, 1908.

Each bidder must furnish with his bid a certified check drawn to the order of the Borough of Haworth for the sum of One Thousand Dollars as a guarantee that if

the said work is awarded him he will enter into a contract with the Borough of Haworth for the due and faithful performance of the work and will furnish a bond for the strict and faithful performance of the work in accordance with the contract, plans and specifications in the penal sum of at least the total estimated cost of the work. If such contract and bond are not executed and delivered to the Borough of Haworth within ten days from the date of the awarding of the contract, the said sum of One Thousand Dollars will be forfeited by the bidder to said Borough as liquidated damages.

The plans, specifications, cross sections and blank form of bids are on file and may be examined between nine A. M. and five P. M. at the offices of Watson G. Clark, the Borough Engineer, Tenafly, N. J., and 1123 Broadway, New York City, or at the office of the Clerk of the Borough of Haworth, at Haworth, New Jersey, or at the office of the State Commissioner of Public Roads of the State of New Jersey at his office in the State House, Trenton, New Jersey.

Both the contract and the bond must meet the approval of the State Commissioner of Public Roads, of the State of New Jersey. The Borough Council reserves the right to reject any or all bids.

By order of the Council of the Borough of Haworth.

WILLIAM T. McCULLOCH, Mayor.  
E. A. BELL, Borough Clerk.

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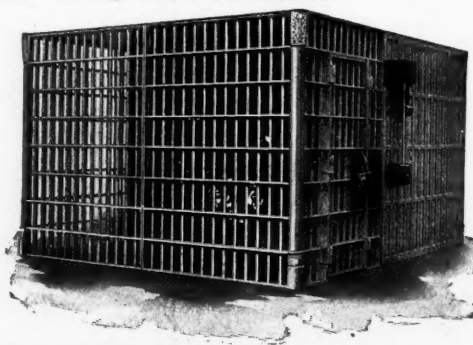
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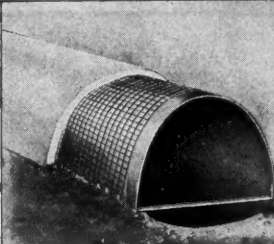


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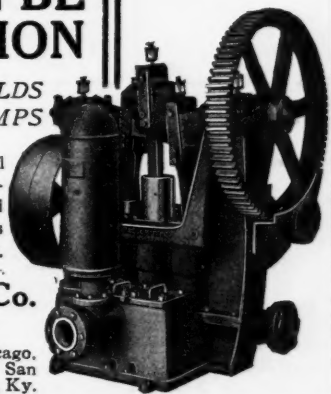
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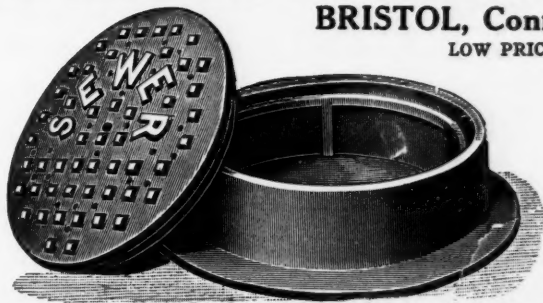
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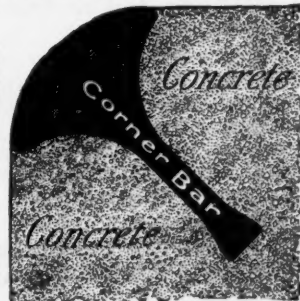
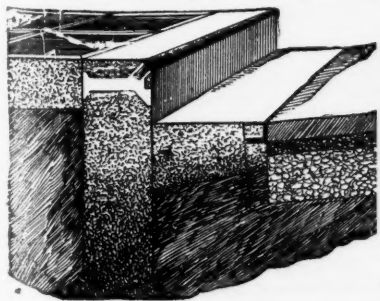
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This bar is well galvanized, so it will not rust. Has a solid head, guaranteeing resistance from the heaviest possible impact of wheels or other heavy bodies, and is held in place by a dovetailed web forming an anchorage extending its full length, not only anchoring, but supporting the solid head every inch of its length. This bar has been in public use for more than ten years as the main feature of the

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Has been stamped on the Bitulithic  
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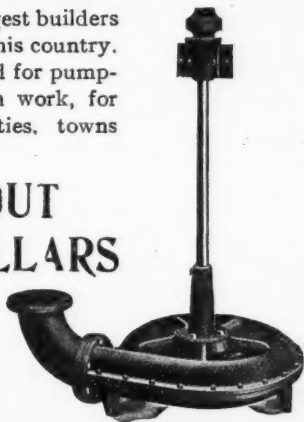
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They are specially adapted for pumping sewage, ditch or trench work, for WATER SUPPLY for cities, towns and villages, and for

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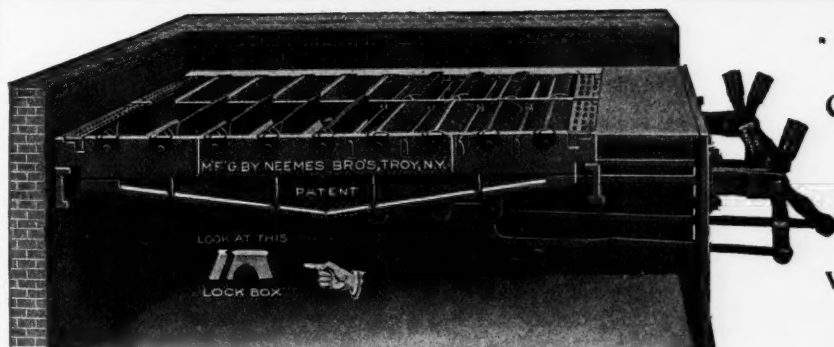


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FOR SEWERAGE

Fig. 48

Coffin Shear Sewer Gate  
All iron or bronze mounted  
with Handles



Fig. 210  
6" Standard  
Gate Valve

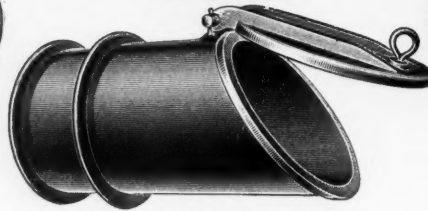


Fig. 47  
12" Coffin Flap Valve

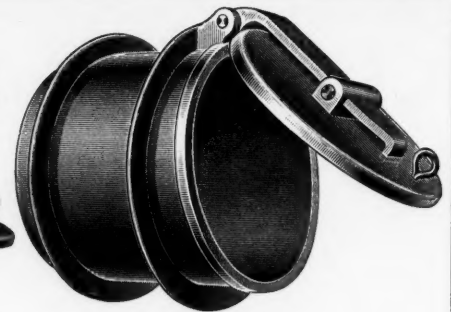


Fig. 41  
30" Coffin Flap Valve  
Double Pivot

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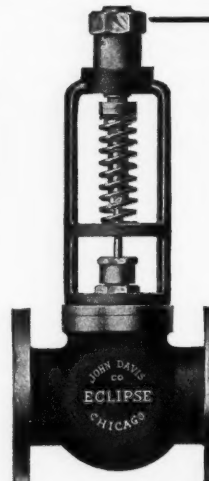


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The Eclipse  
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